

# mother earth's museum for children boulder, colorado

## Harmonious Design: An Identity With Setting

by

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Submitted to the Department of Architecture  
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*What birds plunge through is not the intimate space  
in which you see all forms intensified.  
(Out in the Open, you would be denied  
you self, would disappear into that vastness.)*

*Space reaches from us and construes the world:  
to know a tree, in its true element,  
throw inner space around it, from that pure  
abundance in you. Surround it with restraint.  
It has no limits. Not till it is held  
in your renouncing is it truly there.*

Rainer Maria Rilke "Uncollected Poem"



fig. 3.1 Sketch by author , Thar Dessert, India, 1995.



fig. 4.1 Author's parents, Fiftieth Wedding Anniversary, 1995.



## **Dedication**

As a child my parents nurtured and protected me. As a young adult they supported my growth and independence. Now they give me strength and confidence in knowing who I am. My mother's instincts and compassion are mine to draw upon when I am filled with self doubt. My dreams and passion were passed to me by my father to cherish every day of my life. I am my mother's artist and my father's engineer. I am their child, they live within me. As I pass them on to my children, they will live forever.

I dedicate this thesis to my parents,  
Chuck and Joanie Grojean.

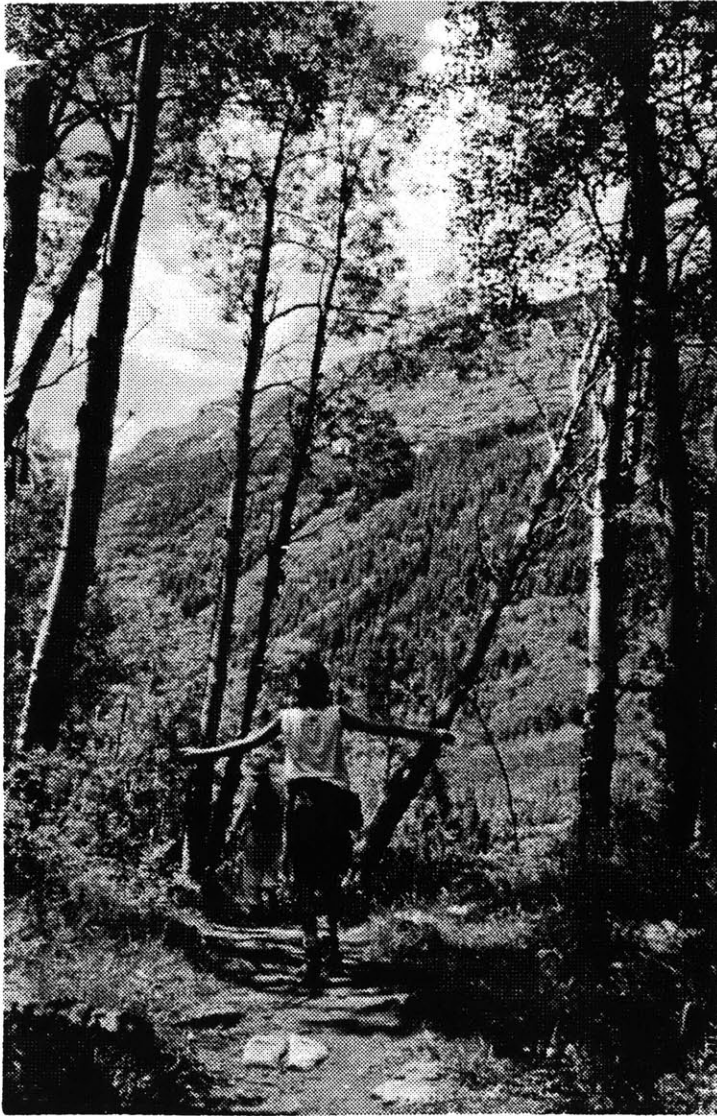


fig. 6.1 Jessie in the Rocky Mountains.

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### Abstract

Natural phenomena are conceived of the Earth and appropriate to their setting. Architecture designed harmoniously with its setting belong to the Earth and, through this association, appropriately contributes to the environment. Harmonious design is the concept of this thesis.

By definition, harmony implies a fitting, an orderly and pleasant joining by complement. In this sense, harmonious design refers to a conceptual relationship between architectural elements: the structural systems, the building materials, the circulation, the spatial values, and the experiential aspects of the setting. The concept that architecture has the ability to enhance the character of the site by its contribution, elevates the responsibility of the design.

This thesis is in response to architecture which apparently lacks any sensitivity to its site and is perceived as alien, without responsibility to the environment. The analyzing of architecture which enriches its setting, from simple vernacular structures to prestigious contemporary building develops an understanding of harmony through the design process.

The architectural project of my thesis is a children's museum on ecology for Boulder, Colorado at the foothills of the Rocky Mountains. The museum is a nature center to inform and address issues of ecology for small children and their families. The approach of harmonious design in conceiving an architectural presence in this natural setting reinforces the museum's concept of respect for the environment.

Thesis Advisor: Jan Wampler

Title: Professor of Architecture



fig. 8.1 "Asters and a Fallen Branch" Colorado, 1957.

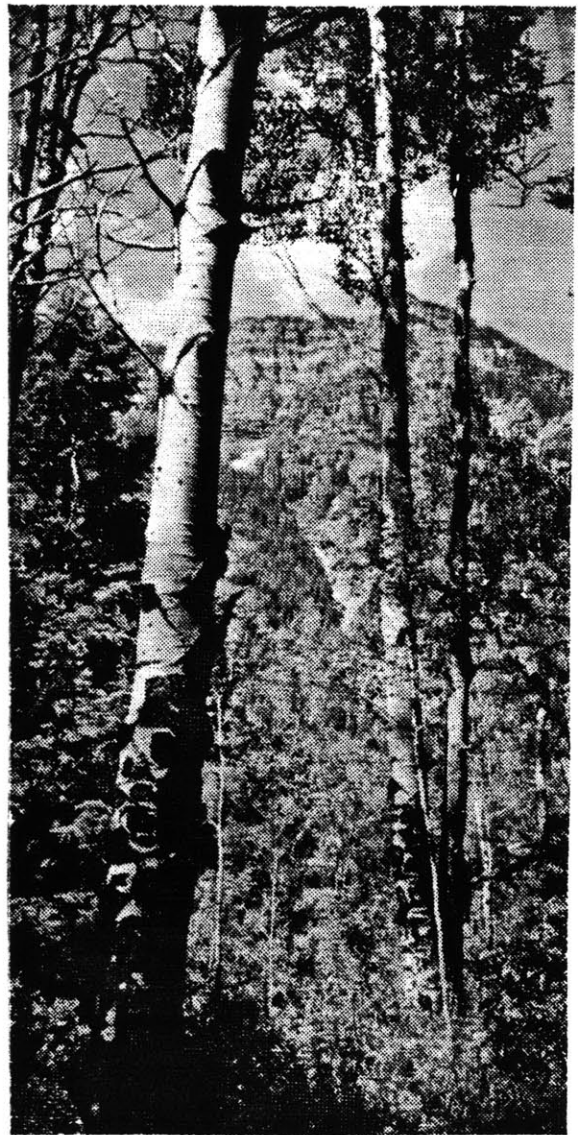


fig. 8.2 Aspen in the Rocky Mountains, 1995.

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## Concerns and Intentions



fig. 10.1 "Fallen Leaves on Water" South Carolina, 1969.

As water drips off the tips of pine needles, they collect and begin to flow. A stream begins its journey down the hillside. It responds to the each swell and crevice of the land, tripping over stones and gently rearranging sticks and leaves in its path. Sun light glistens on its surface and a whisper of water can be heard. The stream gracefully weaves its way down the slope.

The stream is not made as the land. It has obviously different properties to serve a different function. However, the stream has the same inherent values of the land it flows upon. This stream begins with the rain or snow melt of the region. It takes on the color of the soil and absorbs the natural debris of the land. The sounds the stream makes comes from the stones it splashes against and the intensity of its flow is in response to the slope of the hillside. Neither one controls or dominates the other, but the character of the land is undeniably richer because the stream is there.

Architecture can be designed like the stream, taking its character from the land, harmonious with its setting. It can have its own unique set of properties for a particular function yet have the same values as the land. Architecture has no need to control or dominate the site when its identity is in harmony with the land. Like the relationship with the stream, the land's character can be enriched by the contribution of the architecture.

As an architectural expression of my thesis, I designed a children's museum at the foothills of the Rocky Mountains to focus on ecology issues of the natural environment. Architecture designed to be harmonious with its setting reinforces the museum's agenda of teaching children and their families a respect for the Earth and a cooperative relationship with nature.

This thesis is organized into three parts. The first is an analytical observation of architecture which identifies successfully with its environment. The site is the subject of the second part. It investigates how the setting relates to its region, and its community as well as the experiential aspects of the specific site. The third is an articulation of the thesis as it is expressed in the children's museum.

This approach has been the development of my thesis through the past year. As a result of a travel grant to India, I became aware of an identity vernacular architecture has with its setting and its ability to enhance the environment. This led me to research further modern organic architecture. Because I wanted a site in my country that was similar to regions I visited in India, I chose the Boulder, Colorado on the foothills of the Rocky Mountains. A children's museum on ecology was a result of seeing mined hillsides open to erosion along the Rocky Mountains and a growing concern for protecting the environment .

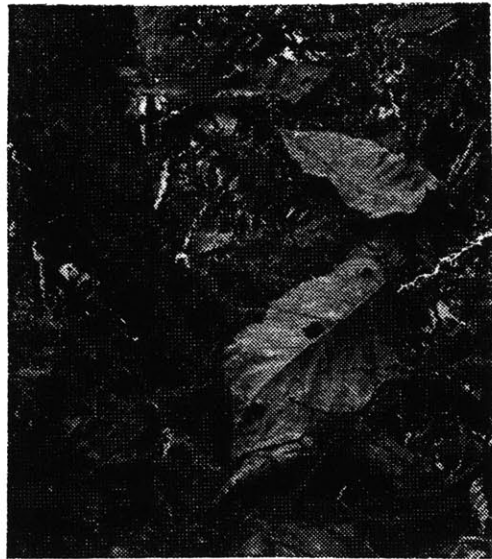
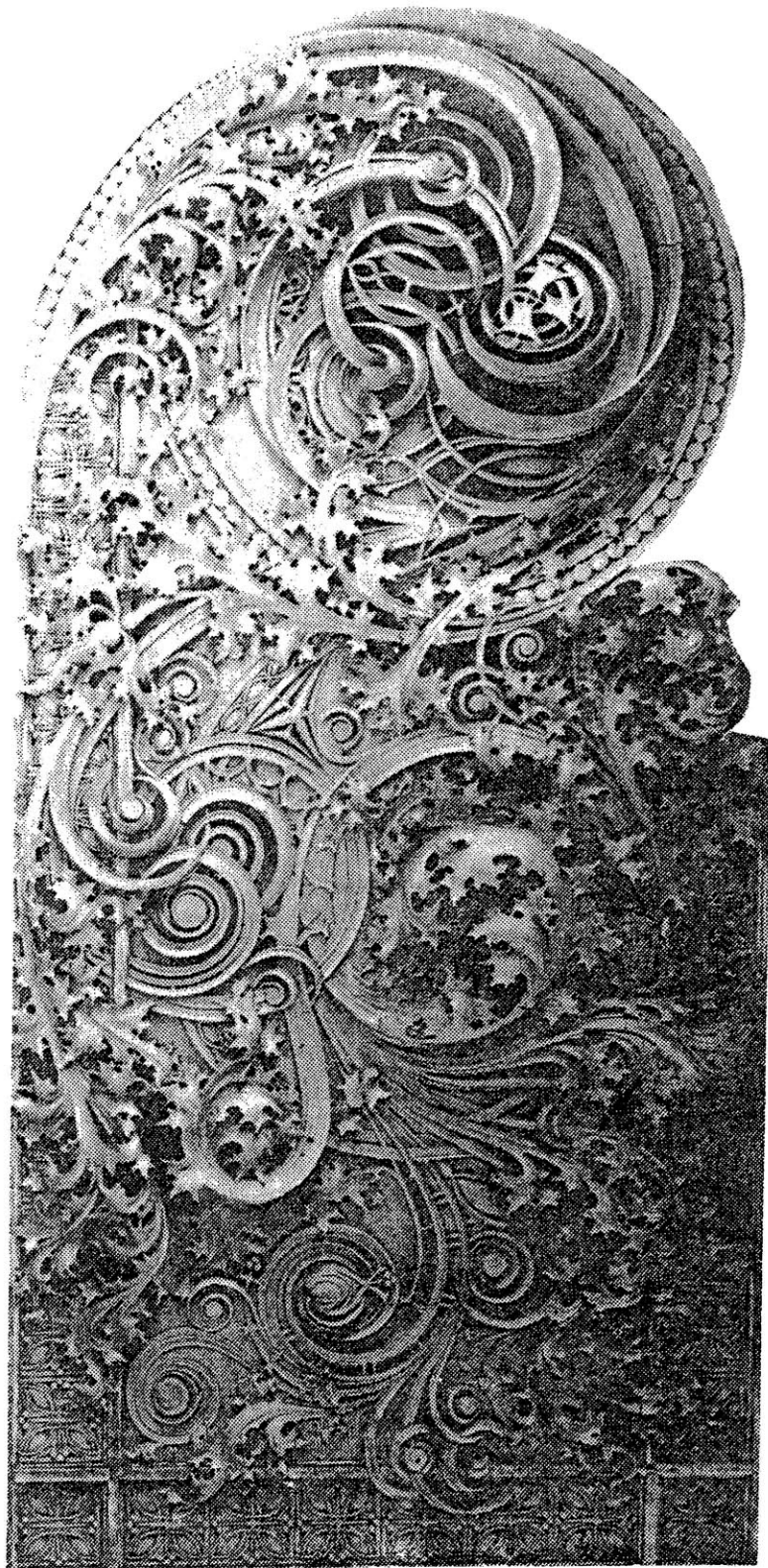


fig. 11.1 "Fallen Leaves on Water" South Carolina, 1969.







*See, through this air, this ocean, and this earth,  
All matter quick, and bursting into birth.  
Above, how high, progressive life may go!  
Around, how wide! how deep extend below!  
Vast chain of Being! which from God began,  
Natures ethereal, human, angel, man,  
Beast, bird, fish, insect, what no eye can see,  
No glass can reach; from Infinite to thee,  
From thee to Nothing.-On superior powers  
Were we to press, inferior might on ours:  
Or in the full creation leave a void,  
Where, one step broken, the great scale's destroyed:  
From Nature's chain whatever link you strike,  
Tenth or ten thousandth, breaks the chain alike.  
And, if each system in gradation roll  
Alike essential to the amazing Whole,  
The least confusion but in one, not all  
That system only, but the Whole must fall.  
Let Earth unbalanced from her orbit fly,  
Planets and Suns run lawless through the sky;  
Let ruling angels from their spheres be hurled,  
Being on Being wrecked, and world on world;  
Heaven's whole foundations to their center nod,  
And Nature tremble to the throne of God.  
All this dread ORDER break-for whom? for thee?  
Vile worm!-oh Madness! Pride! Impiety!*

Alexander Pope "An Essay on Man, Epistle One"

## Ancient Indian Architecture

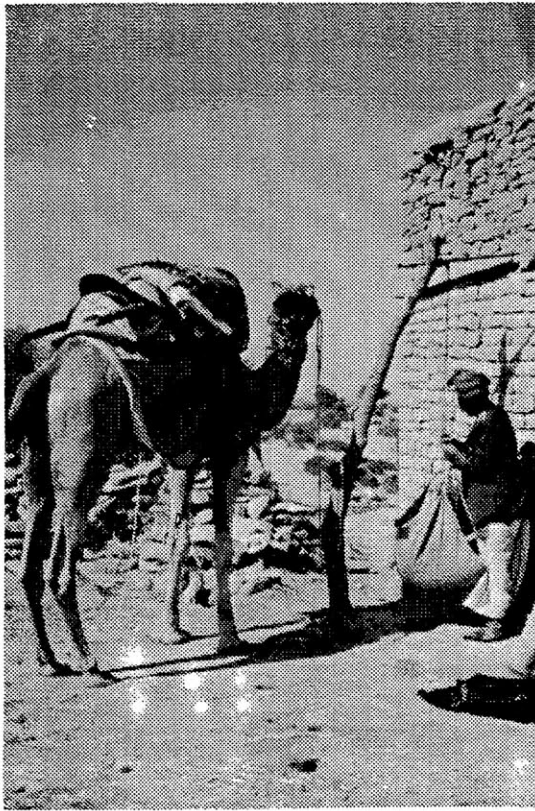


fig. 14.1 Camel driver and camel "Peacock", Jaisalmer, India.

I traveled to India on an educational grant in early 1995 to learn from this old and very rich culture and to study their spectacular ancient architecture. This experience made me aware of their differences and similarities in approaching design.

Before the profession of architecture became a discipline, designers of structures intuitively conceived the built form in the language of the land. Regardless of the function of the structure, the spatial values, the building materials, and the forms used in design were taken directly from the natural setting. This attitude toward architectural design was harmonious with its setting and gave the architecture an identity with the site of belonging and contributing. Instinctively the designer conceived the architecture as another element in the landscape, a responsible member of a family with respect for others.

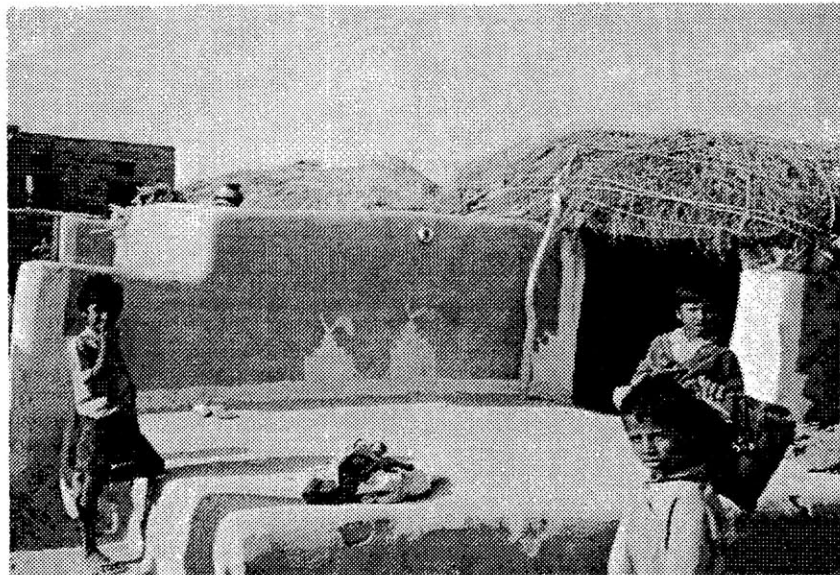


fig. 14.2 Ram Kunda, village in the Thar Dessert, India.

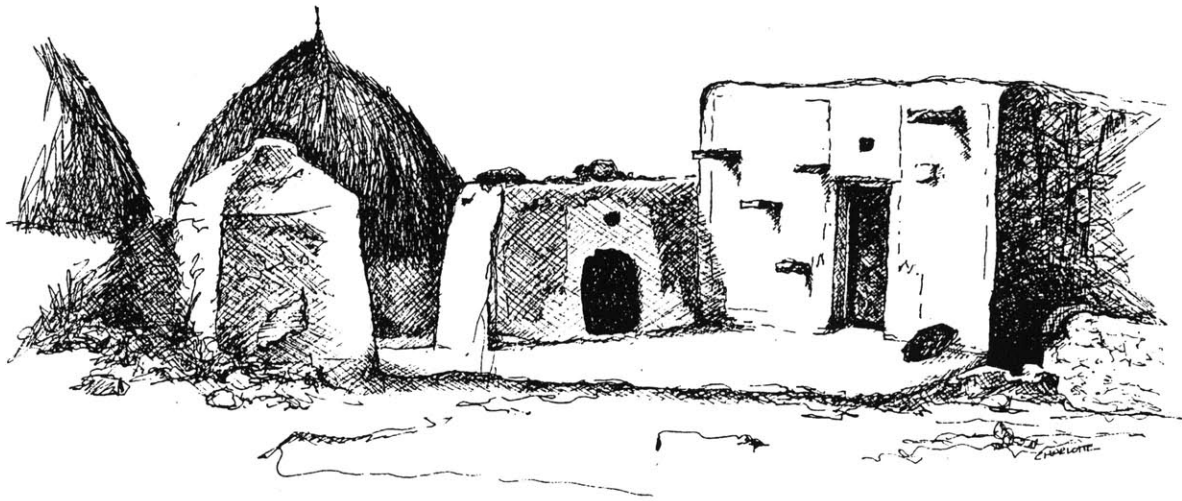


fig. 15.1 Sketch by author, Ram Kunda, India.

### Villages in the Thar Dessert

Indian vernacular architecture of the Thar Dessert looks almost identical to the adobe huts of the Native American tribes of New Mexico. They are of similar dessert settings and speak of their brutal environment in the same gracious terms. The light colored monotone of all the building materials and the infinite dessert sand is broken only by the painted white corners and openings of the family homes. Their symbolic designs are even similar. The square sun baked adobe houses have few openings to protect the dweller from the intense sun and sand storms, While the flat rooftops provide a protected area for drying foods. Thatched shelters for livestock and food storage contrast with the houses in their round form and soft appearance. In these two dessert settings, the built language is extremely similar. This phenomenon is a result of both societies deriving architectural values harmonious with the environment.

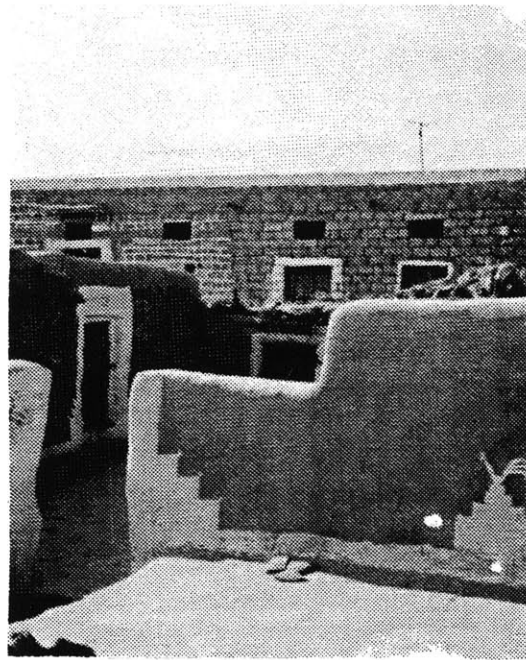


fig. 15.2 Ram Kunda, village in the Thar Dessert, India.

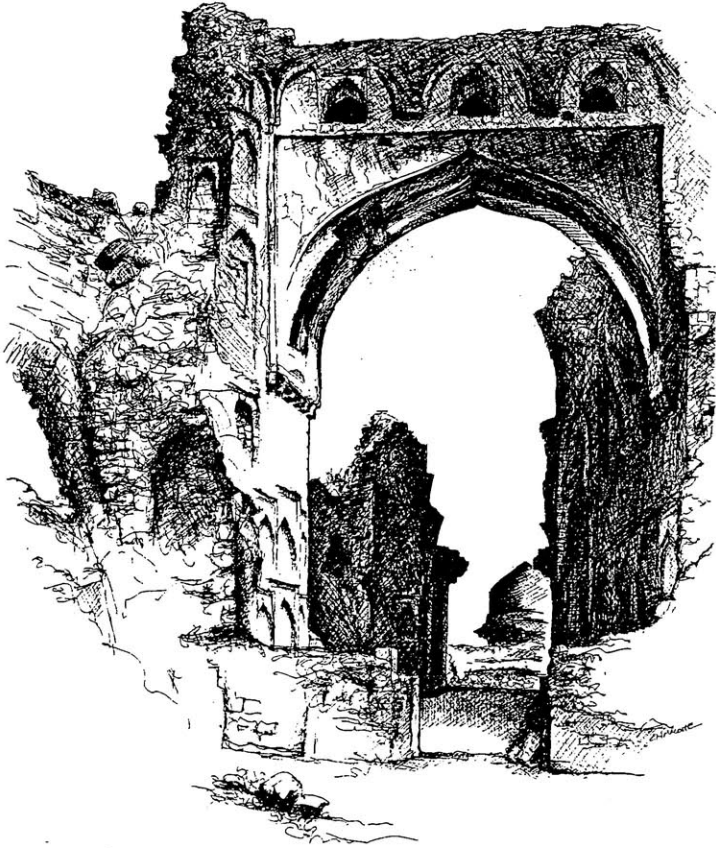


fig.16.1 Sketch by author, Royal Hall, Mandu, India.

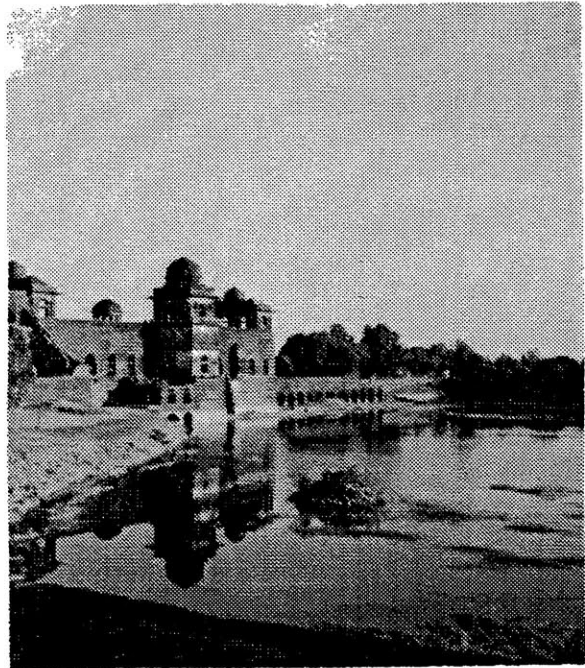


fig16.2 Palace, Mandu, India.

## Royal Complex at Mandu

The royal complex at Mandu is set on the high and very lush plateau in central India. This region is dominated by thick vegetation due to the heavy rain fall and the abundance of lakes and rivers. The architecture has heavy proportions distinctive of the land. Built of huge chiseled stone, the surfaces appears constantly wet in its dark coloration and irregularities. The spacial volumes are over sized and the awesome scale makes an obvious reference to the dramatic lakes and cliffs of the plateau. The complex is structured around a huge man made basin, each building addresses its reflection into the water as its contribution to the landscape. Intricately designed bathing pools are fed by downspouts which channel the rain water. Large stepped wells are throughout the complex collecting fresh water for cleansing which are still used. Wetness is celebrated on this lush plateau where values of the architecture and the land are in harmony.

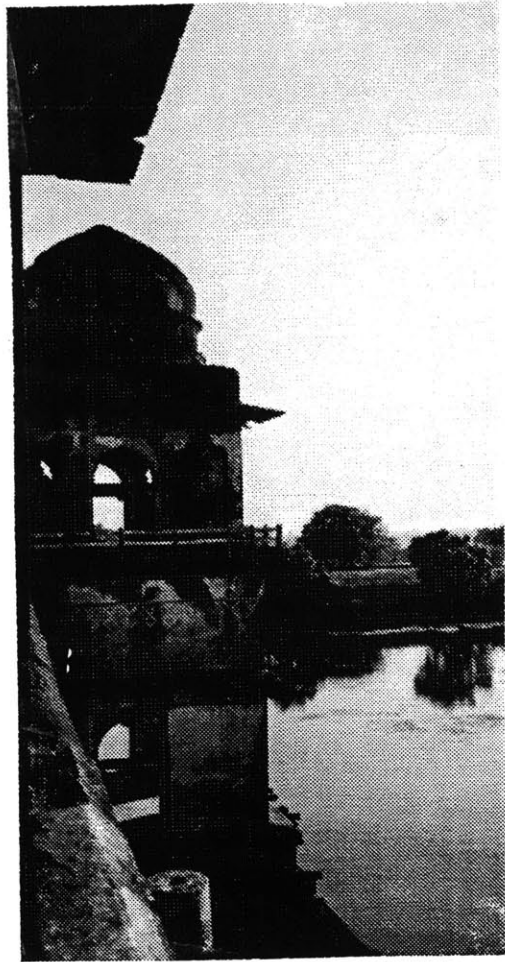


fig17.1 Palace, Mandu, India.

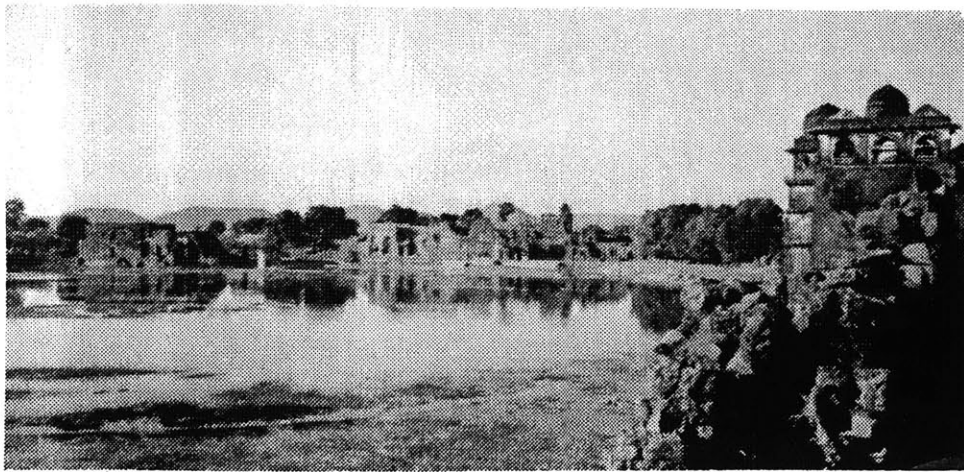


fig.17.2 Royal Complex, Mandu, India.



## Buddhist Caves at Ellora

This hill was sacred before the Buddhist monks began creating these caves in the fifth century. The solid rock they carved to create temples to Buddha gave its character to the hollowed out space. The interiors of the caves are very dark in contrast to the blinding light of the Indian sun. The musty smells almost overpower the worshipers and the atmosphere is thick and heavy like the rock from which it is carved. Deep reliefs depicting Buddha give the rock an undulating quality which adds to the mystical aura of the temples. The interior spaces seep water from within the rock and echo whispers of prayer. Thirty-seven of these temples are carved out of solid rock in this specific hillside. Each cave is a unique temple, and together they create a sacred community harmonious with the hill.



fig. 18.1 Stone relief of Buddha, Ellora, India.

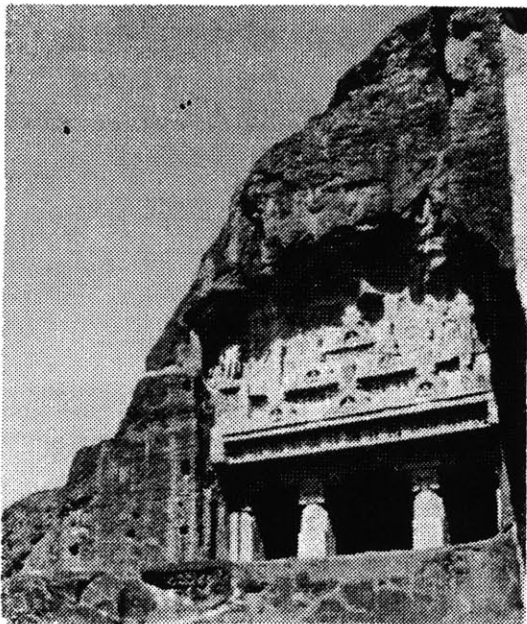


fig. 19.1 Stone temple cave, Ellora, India.

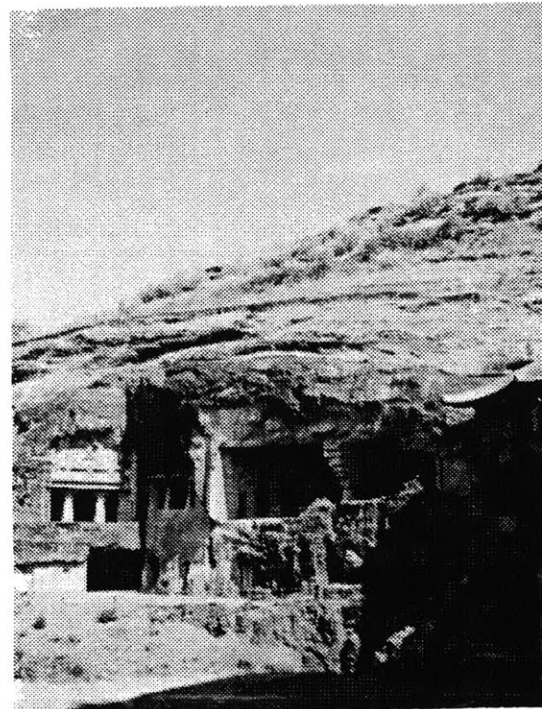


fig.19.2 Stone temple cave, Ellora, India

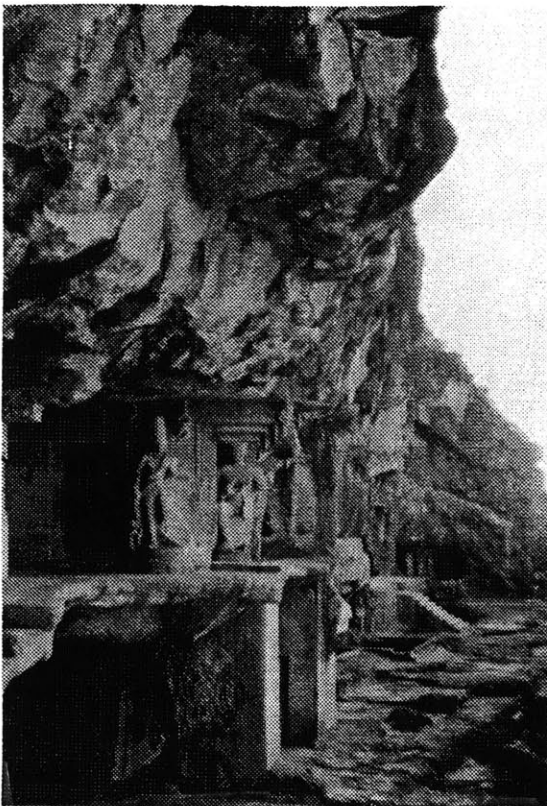


fig.19.3 Stone temple cave, Ellora, India

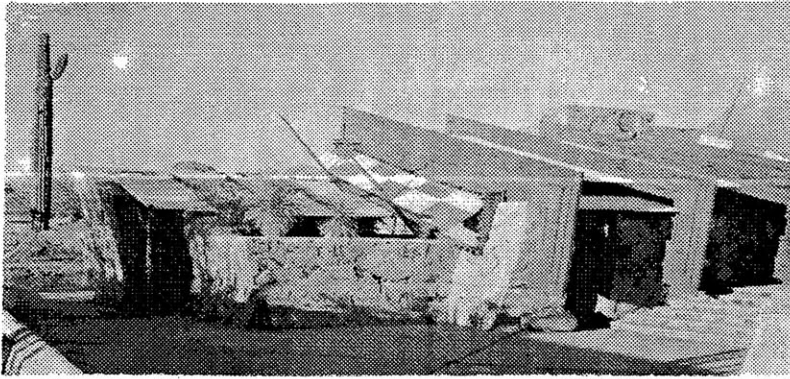


fig 20.1 Taliesin West, Frank Lloyd Wright, Scottsdale, Az, 1937-1959.

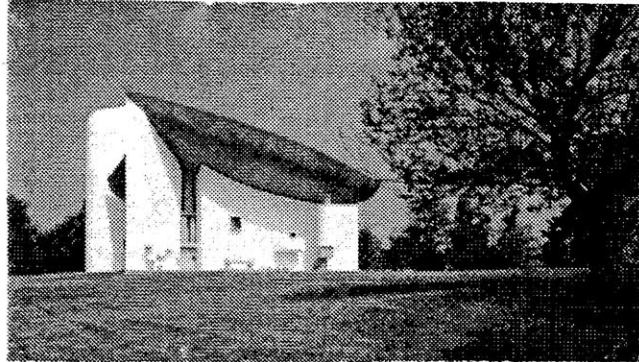


fig. 20.2 Notre Dame du Haut, Le Corbusier , Ronchamp, France, 1953.

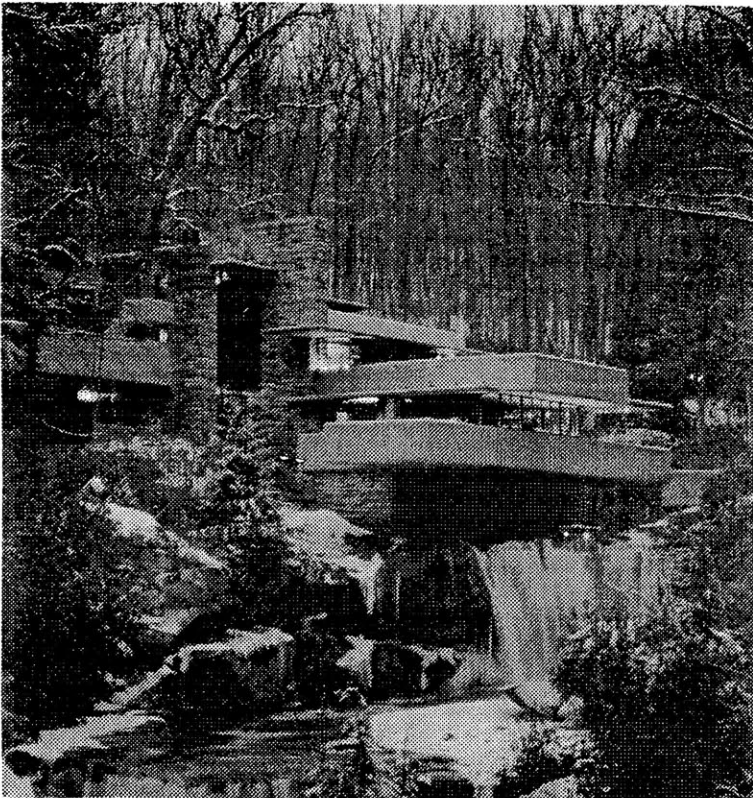


fig. 20.3 Fallingwater, Frank Llyod Wright, Bear Run, Pa, 1935.



As an intellectual rebuttal to Classical Architecture, many architects investigated design values along the organizational principal found in natural phenomena.

At the turn of the century, designers began to incorporate organic principles to structural systems, circulation patterns, spacial values, and decorative motifs. One of the most inventive architects of this period was Antoni Gaudi from Catalonia in northeast Spain. Gaudi's work exceeded his contemporaries in magnitude of understanding the laws of physics and the nature of organic design.

Early twentieth century designers went further in their investigation of organic design by reflecting values of a specific site and characterizing the style accordingly. Frank Lloyd Wright was the first architect which embraced the essence of the natural setting as a concept for design. The Prairie House Style was his earliest endeavor to express this concept followed by many adaptations throughout his professional career. Fallingwater, the Kaufmann Residence and Taliesin West, the architect's studio, were influential in the development of organic design in contemporary architecture. Le Corbusier veered from his classical approach to Modern Design with Notre Dame du Haut at Ronchamp. By taking on an organic form, it responded to the subtleties of its hilltop setting and developed an interior space which celebrated the essences of the sacred site.

## Contemporary Organic Architecture

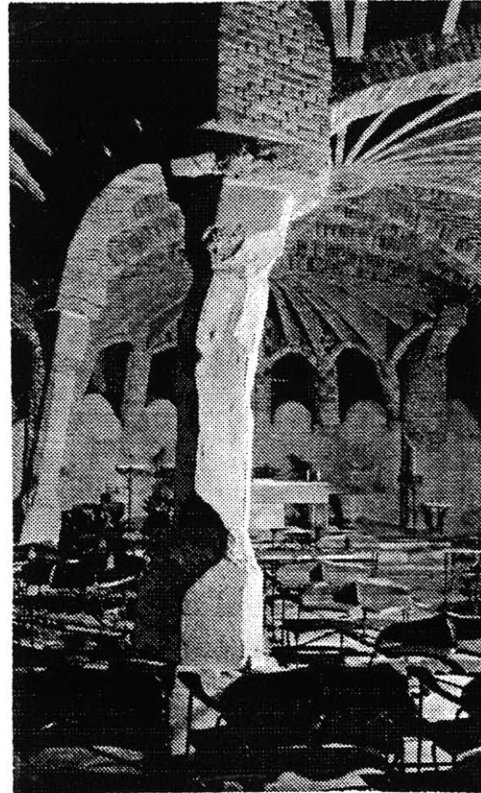


fig. 21.1 Guell Colony Crypt, Antoni Gaudi, Barcelona, Sp. 1898-1917.

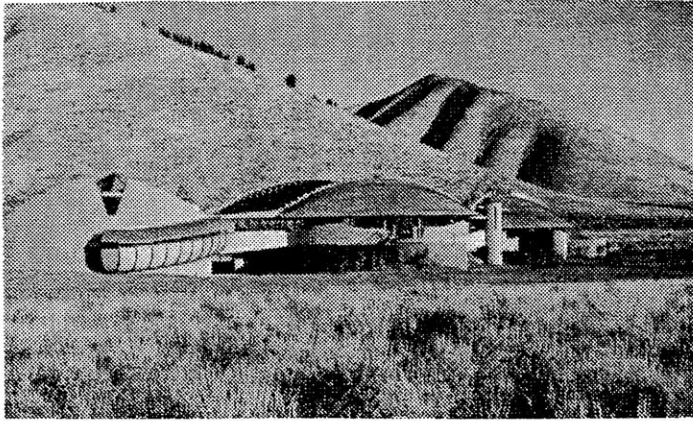


fig. 22.2 Whiting Residence, Bart Prince, Albuquerque, MN.

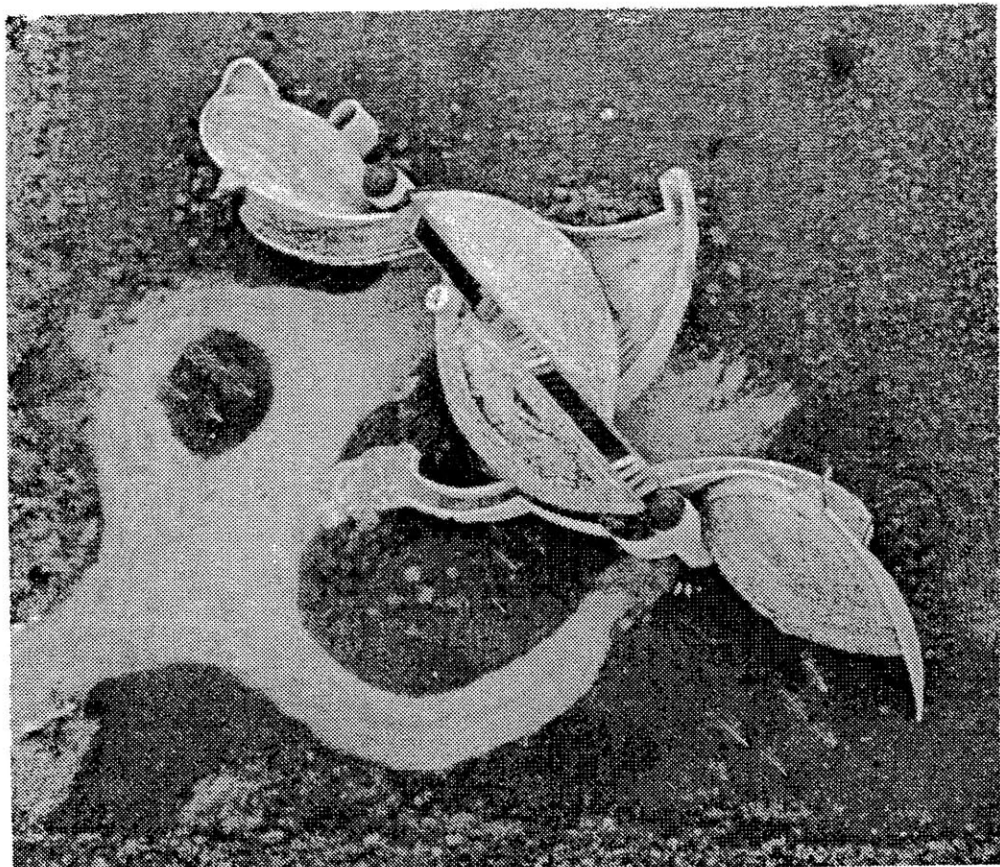


fig. 22.1 Whiting Residence, Bart Prince, Albuquerque, MN.

By analyzing contemporary designers of organic architecture, a concept of design becomes a way of thinking about the world as a continuum. It is no longer about organic form but a search for metaphors between the nature of man and the nature of the Earth. Imre Makivecz from Hungary has internationally influenced organic design as an instinctive expression of regionalism. His distinctive attitude about architectural design takes a humanistic or poetic view. Christopher Day articulates organic values in terms of the spirit or soul being of the Earth. Daniel Liebermann and Bart Prince expand an organic concept of geometric organization similar to the explorations of Bruce Goff. Nari Gandhi and James Hubbell conceive an organic design as a fluid expression of the James Gleick's Theory of Chaos.

Contemporary Organic Architecture is conceptually expressed with as many interpretations as designers but all with the passion of achieving a harmonious relationship for man and the Earth.

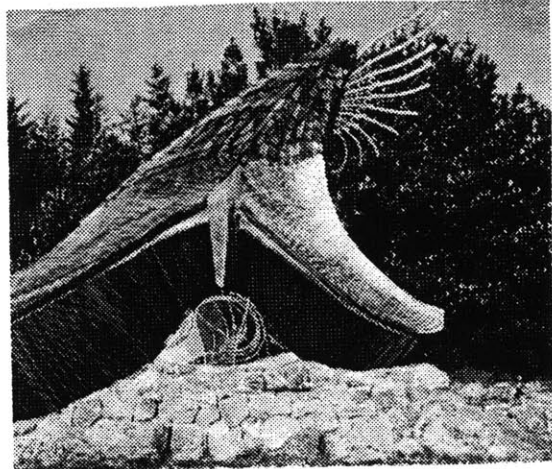


fig. 23.1 Sea Ranch Chapel, James Hubbell, Sea Ranch, Ca.

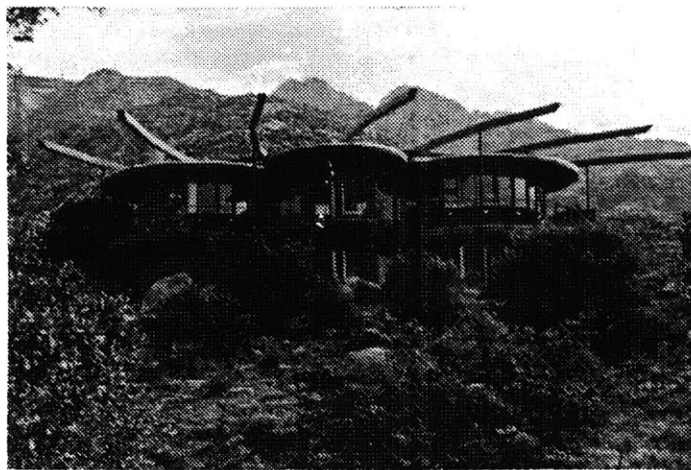


fig. 23.2 Prince Residence, Bart Prince, Albuquerque, MN.

## Organic Design Exploration

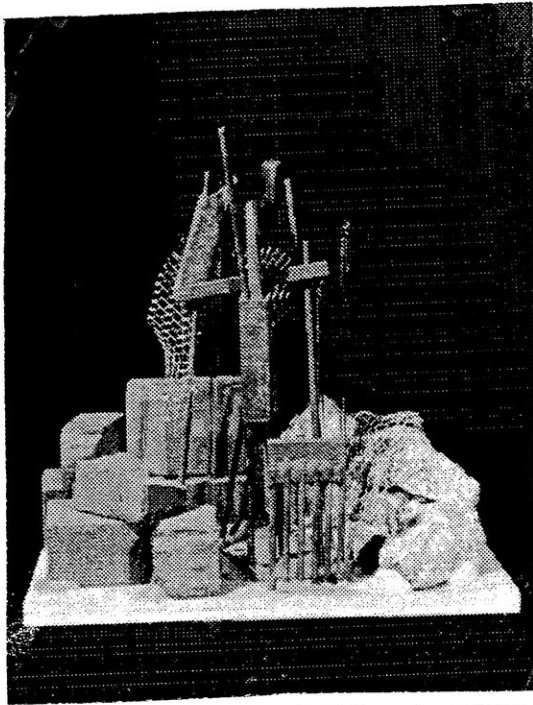


fig. 24.1 Sculpture model of stone, brick, iron, glass and mess.

As a means to explore the site values of Settler's Park, an expression was sculptured of materials, proportions, and spacial relationships. This dealt with the dialog between the natural rock and the man-made brick which together defined the space. It contrasted these two materials with the strength and corrosive properties of the iron. Glass bars enabled light to enter and free the solidness of the rock and iron. This sculpture reinforced the relationships and spacial qualities of materials throughout the architectural investigation.

A study of organic form relating to the site followed utilizing clay models. They were made to set within a large site model to explore the effects of introducing form and volume on the character of the site. The space between the natural elements and the proposed structure was considered for a balanced relationship and an active dialog. One form lead to another, clustering to swirling to fanning out, until the linear geometry with a diagonal arm resulted. This form of alignment with the mountain ridge combined with a response to the topology of the land best expressed a harmonious fitting.



fig. 24.2 Clay model conclusion.



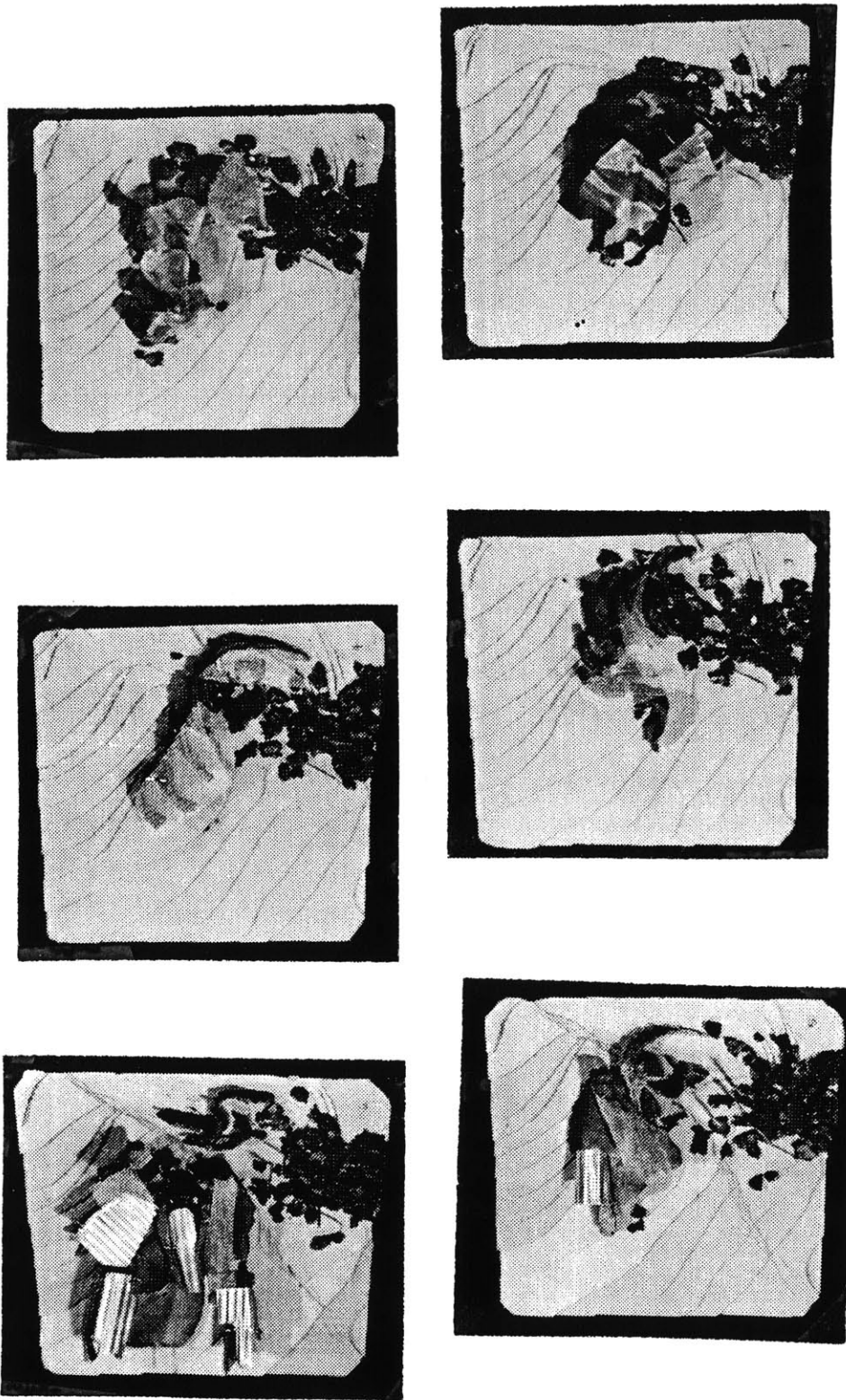


fig. 35.1 Clay models series of organic forms.



fig.26.1 "Asters and a Fallen Branch", Colorado, 1957.

## Identity With Setting

*O world, I cannot hold thee close enough!  
Thy winds, thy wide grey skies!  
Thy mists, that roll and rise!  
Thy woods, this autumn day, that ache and sag  
And all but cry with colour! That gaunt crag  
To crush! To lift the lean of that black bluff!  
World, World, I cannot get thee close enough!*

*Long have I known a glory in it all,  
But never knew I this:  
Here such a passion is  
As stretcheth me apart, -Lord, I do fear  
Thou'st made the work too beautiful this year;  
My soul is all but out of me, -let fall  
No burning leaf; prithee, let no bird call.*

Edna St Vincent Millay "God's World"



fig. 27.1 "Fallen Leaves on Water", South Carolina, 1969.



fig. 28.1 Rocky Mountains.



fig. 28.2 Sketch by author, Red Rocks in Settler's Park.



The Rocky Mountains stretch the entire width of North American, dividing the continent with its spectacular peaks and dramatic ridges. Snow remains throughout the mountains until mid June. At the highest elevations of the major peaks, the snow never melts.

The history of Colorado's development, from the native North American Indians to the Gold Rush miners to the outdoor adventurers and naturalists, is inseparable with these mountains. Throughout the Rockies there are remnants of mining expeditions, many still in operation. These sites have their unique language of buildings and structures which have become recognizable as mining communities. Towns with names as Leadville, Carbondale, and Silverton refer to early mining settlements. Boulder, on the edge of the mountains, had a number of mining sites in the late nineteenth century. However, the Red Rock ridge known as the Flatirons drew attention from naturalists and along with the influence of the university, the community of Boulder developed as a leader in environmental awareness.

## Colorado Rocky Mountains

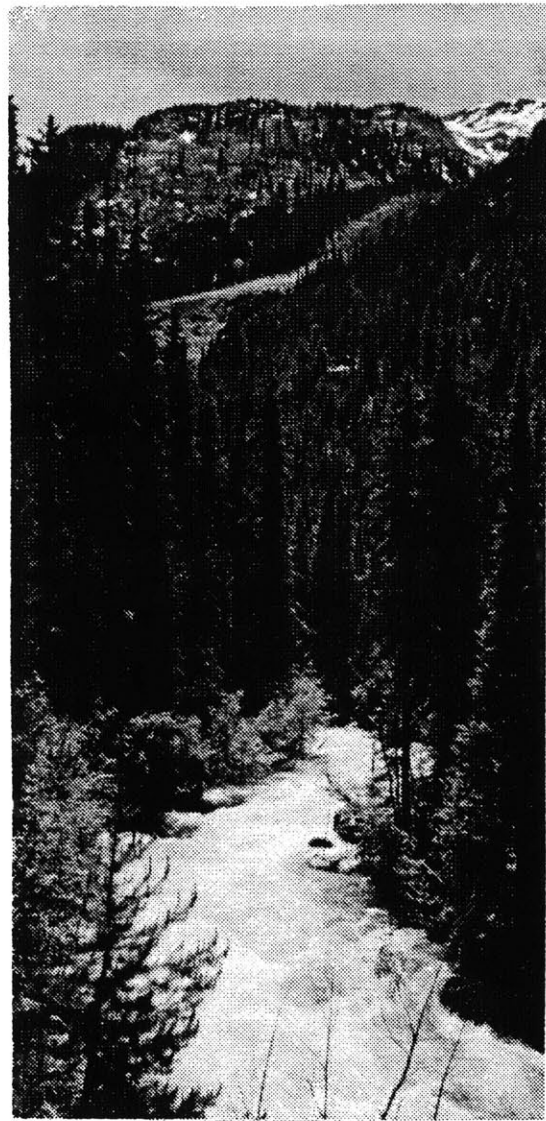


fig.29.1 Boulder Creek in the mountains.

## Settler's Park of Boulder

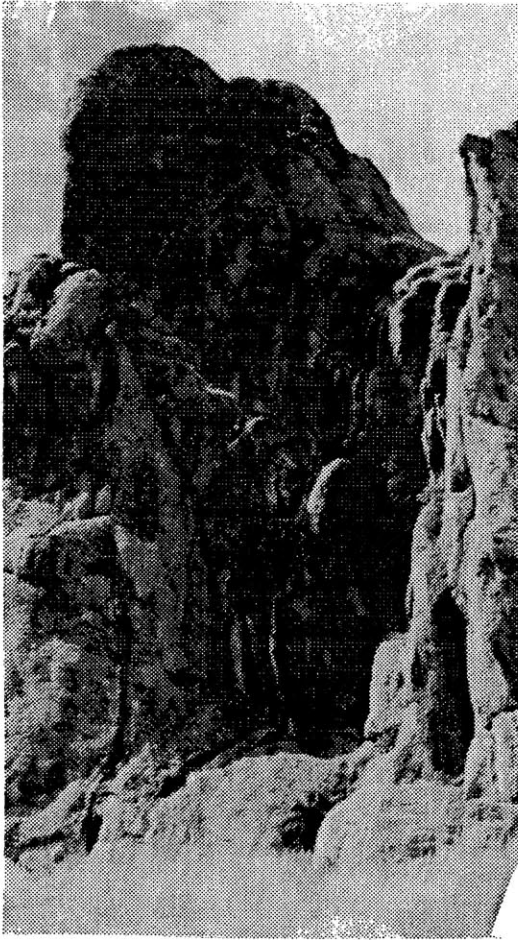


fig. 30.1 Red Rocks in Settler's Park.

Settler's Park is the site of the children's museum on ecology for Boulder, Colorado. This community is situated at the foothills of the Rocky Mountains. A ridge of Red Rocks known as the Flatirons run North-South along the mountainous edge. The city limits extend up to the foothills to what is known as Settler's Park, the original campsite of the first mining expedition in the 1870's.

This park is relatively small but is ideally located between Boulder to the East and the Rocky Mountains to the West. Boulder Creek rushes down from the mountains and cuts through the city. Canyon Boulevard runs along side the creek. This is the main road from Boulder into the mountains. This road defines the southern edge of the park. The Red Rocks Park is an extensive track of land which stretches North-South along the ridge at the base of the Rocky Mountains. This Red Rocks Park is protected from development and provides a buffer of open land between the city and the foothills. Settler's Park's location is ideal for a children's nature center for the community. From this park there is high visibility in the community and access to the city's downtown area. A bike path from the center of town was established last year which passes through the southern edge of the park. It winds through Settler's Park and Ebin Fine Park as it loops back onto itself. Ebin Fine Park is on Boulder Creek and the most popular recreational park of the city.



Settler's Park was also the site an iron ore mine in the early twentieth century. Only the debris of excavated rock remains of the mining expedition, open to the elements and susceptible to severe erosion.

fig. 31.1 Sketch by author, steps and tree in Settler's Park.

In the 1930's, this area was designated a city park for recreational use and a path system through the outcropping of the Red Rocks was established. Fragments of the path are still there and only an occasional hiker ventures up the hill to enjoy the spectacular views of Boulder and the Rocky Mountains.

The city of Boulder is currently interested in developing Settler's Park for recreational use. Water, sewer, and fire protection is provided to the park since it is incorporated into the city limits. A children's museum on ecology in Settler's Park will connect the future of Boulder to the city's beginnings.

## Experiential Aspects of Settler's Park

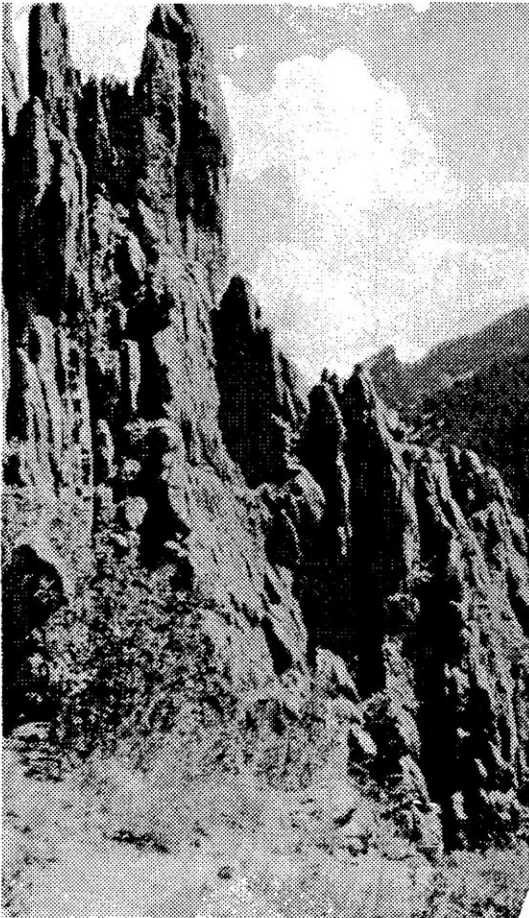


fig. 32.1 Red Rocks in Settler's Park.

On approaching Settler's Park, the city of Boulder suddenly seems miles away and the natural beauty of the Red Rocks comes into focus. Though they are only a small outcropping from an enormous rock formation known as the Flatirons, they are large and grand with respect to the park. The Red Rocks get their name from their deep rich color which bleeds into the soil and streams. They align perfectly with the great Flatirons giving the park a formal connection to the ridge. The outcropping is comprised of slices of rock, vertically pressed and wedged together as if the air was squeezed out of a giant rock accordion. Their thrust is upward to the sky creating giant walls and towers. They have a Gothic sense of proportion and solemnness. Water is channeled through the narrow crevices between the rocks softening the once sharp edges. These Red Rocks are relatively young and display a naivete in their impetuous defiance of gravity.



fig. 33.1 Rock rubble hillside in Settler's Park.

Opposite the outcropping of Red Rocks lies the fallen debris of a violated hillside. As a result of a brutally extraction of iron ore from this hill a century ago, they remain as an open sore on the Earth's surface. This rock rubble lies vulnerable to the harsh elements of nature. These rocks respond to gravity as they tumble down the hillside. In this deteriorated state, each one become free and approachable in its smaller scale. Separately, they are not significant but collectively, as a hillside of rock rubble, they are massive and have a dialog with the prestigious Red Rocks.





fig. 34.1 Wild flowers at stream's edge, Settler's Park.

During the warm summer months, spectacular thunderheads form at the mountain's edge. Every afternoon a shower rains in Boulder. These showers pass as quickly as they appear, always leaving a rainbow as a sweet reminder of the event. This daily ritual cools the afternoon, cleanses the air, and freshens the dusty landscape. After each shower, slow trickles of water begin at the top of the hill. They slip under leaves and sticks on a gentle path down the slope of the hillside. As trickles become a stream, it picks up the color of the soil and responds closely to the crevices of the land. It carries and rearranges a collection of natural debris as its ornamentation. Glistening sunlight flickers on the water and gurgling sounds celebrate the flow of the stream. The slope of the hillside becomes shallow and the stream spreads out like a fan. Quietly it disappears, the wet soil turns into mud. Grasses grow tall and lush at the bottom the stream bed with an array of delicate wildflowers.

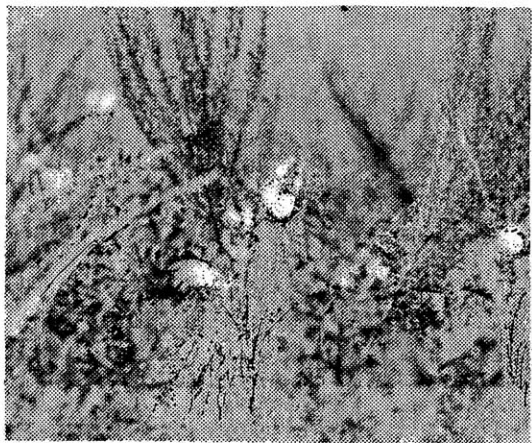


fig. 34.2 Wild flowers in grasses, Settler's Park.

The winter months in Settler's Park bring a fair amount of snow but the warm sun melts it into streams by most afternoons. The air is cold as breezes come down from the mountains. The sun is low in the southern sky and fir trees only hold their snow on the shadowed side. Sounds of dripping water echoes from the rocks and streams. The park is bright and alive.



fig. 35.1 Sketch by author, firs in Settler's Park.

In the lower areas of the park, the trees are soft and willowy. Their leaves flutter in the breeze and their branches hang close to the Earth. Old remnants of the path and an occasional set of steps are exposed under the overgrown grasses. This area is gentle and beckons visitors to lie in the grasses and to rest in the shade of the trees. As the hill rises, the land hardens and exposes its red soil between tufts of dried grass. Stocky evergreens replace the willow trees and golden pine needles matt the Earth's floor. This upper area of the hill is rugged and rocky, inviting an adventurous exploration of the Red Rocks.

Colorado's skies are known for their color and clarity. The polarized blue is awesome. Settler's Park is set against this brilliant blue sky bringing an intensity to all the colors in the landscape. The red of the rocks, the shades of green of the trees, and the subtle colors of the grasses and wildflowers are that much richer against the sky. The warm breezes seem to add to the color as they come up from the valley in the summer heat. When it snows in the park during the winter months, the sun shines brilliantly on the white snow and the blue sky is even more dramatic. The breezes blow down from the mountains bringing a crispness to the color.

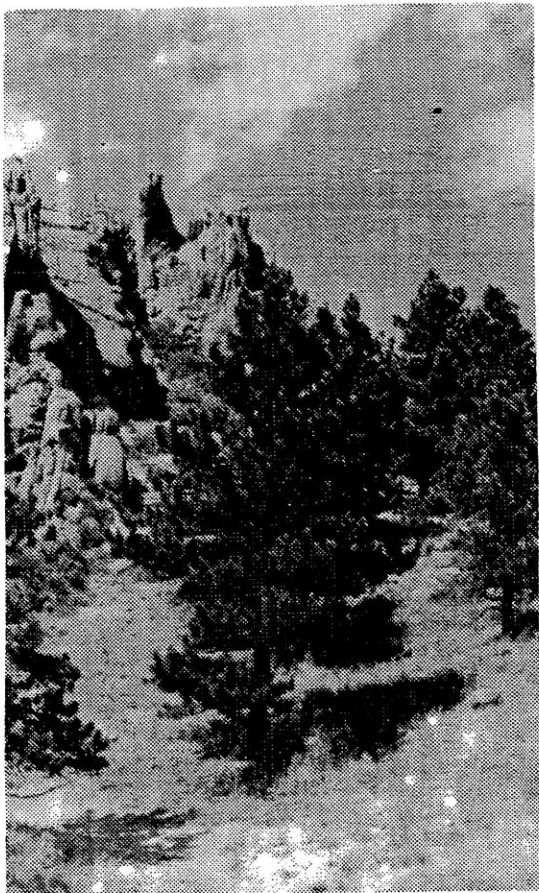


fig. 36.1 Red Rocks in Settler's Park.

This setting is about man and nature. The reverence of the Red Rocks is shadowed by the shame of the mined hillside. Settler's Park touches the human spirit by its natural beauty as well as its inflicted scares, evoking many poetic metaphors.





fig. 37.1 Sketch by author, Rock rubble hillside in Settler's Park.



fig. 37.2 Rock rubble hillside in Settler's Park.

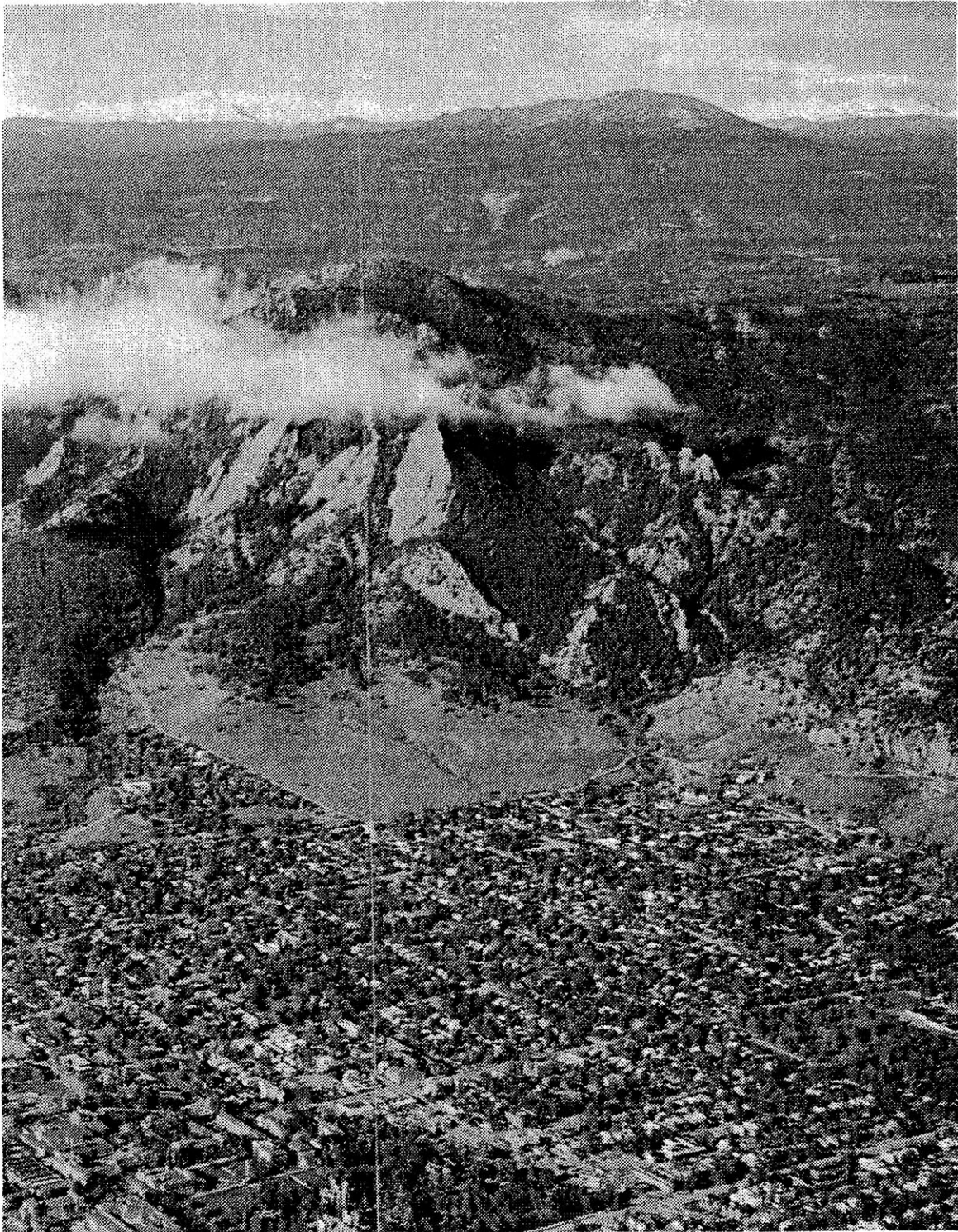


fig. 38.1 Aerial view of Boulder and the Rocky Mountains.

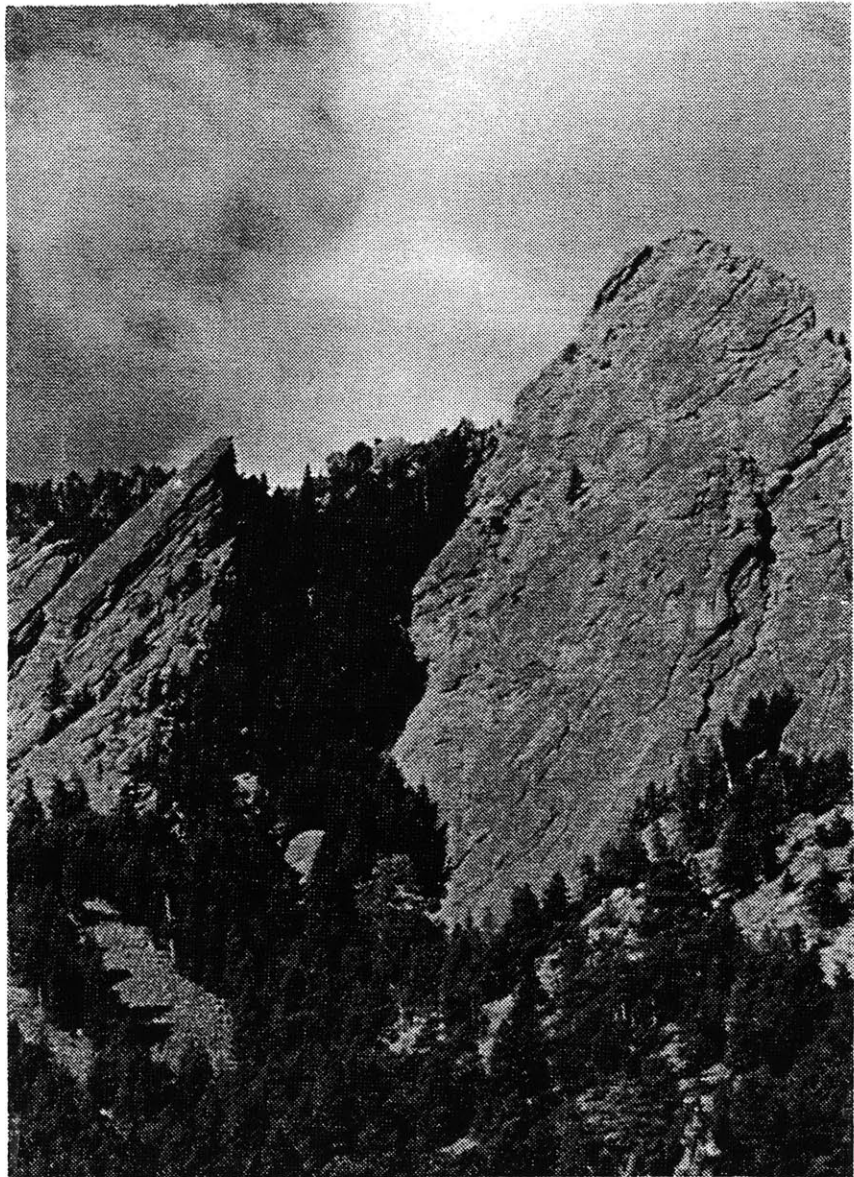


fig. 39.1 Flatirons as seen from Boulder.





fig. 40.1 Dancing boys, Jaipur, India.

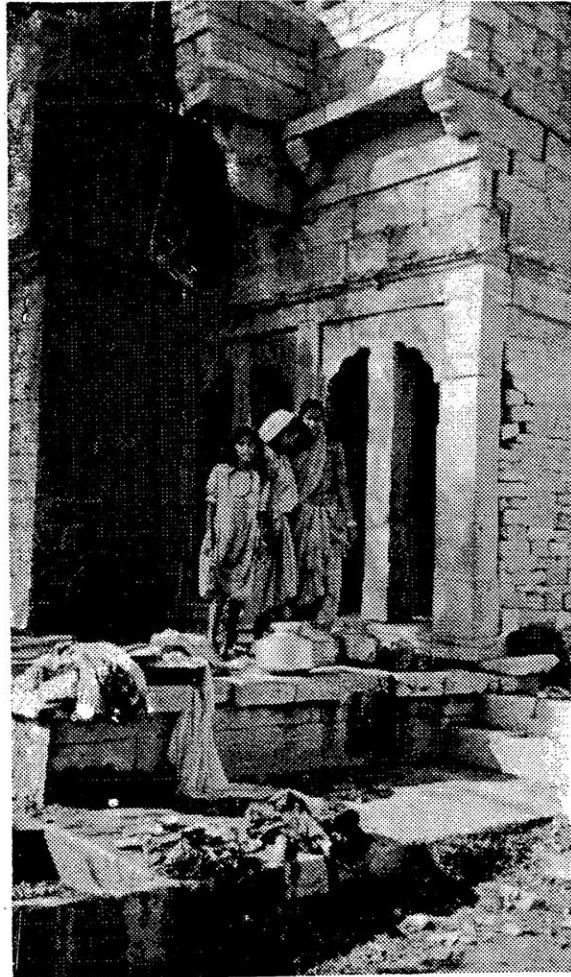


fig. 40.2 Girls washing at the well, Jaisalmer, India.

## Museum For Children

*As once the winged energy of delight  
carried you over childhood's dark abysses,  
now beyond your own life build the great  
arch of unimagined bridges.*

*Wonders happen if we can succeed  
in passing through the harshest danger;  
but only in a bright and purely granted  
achievement can we realize the wonder.*

*To work with Things in the indescribable  
relationship is not too hard for us;  
the pattern grows more intricate and subtle,  
and being swept along is not enough.*

*Take your practiced powers and stretch them out  
until they span the chasm between two  
contradictions . . . For the god  
wants to know himself in you.*

Rainer Marie Rilke "Uncollected Poem"

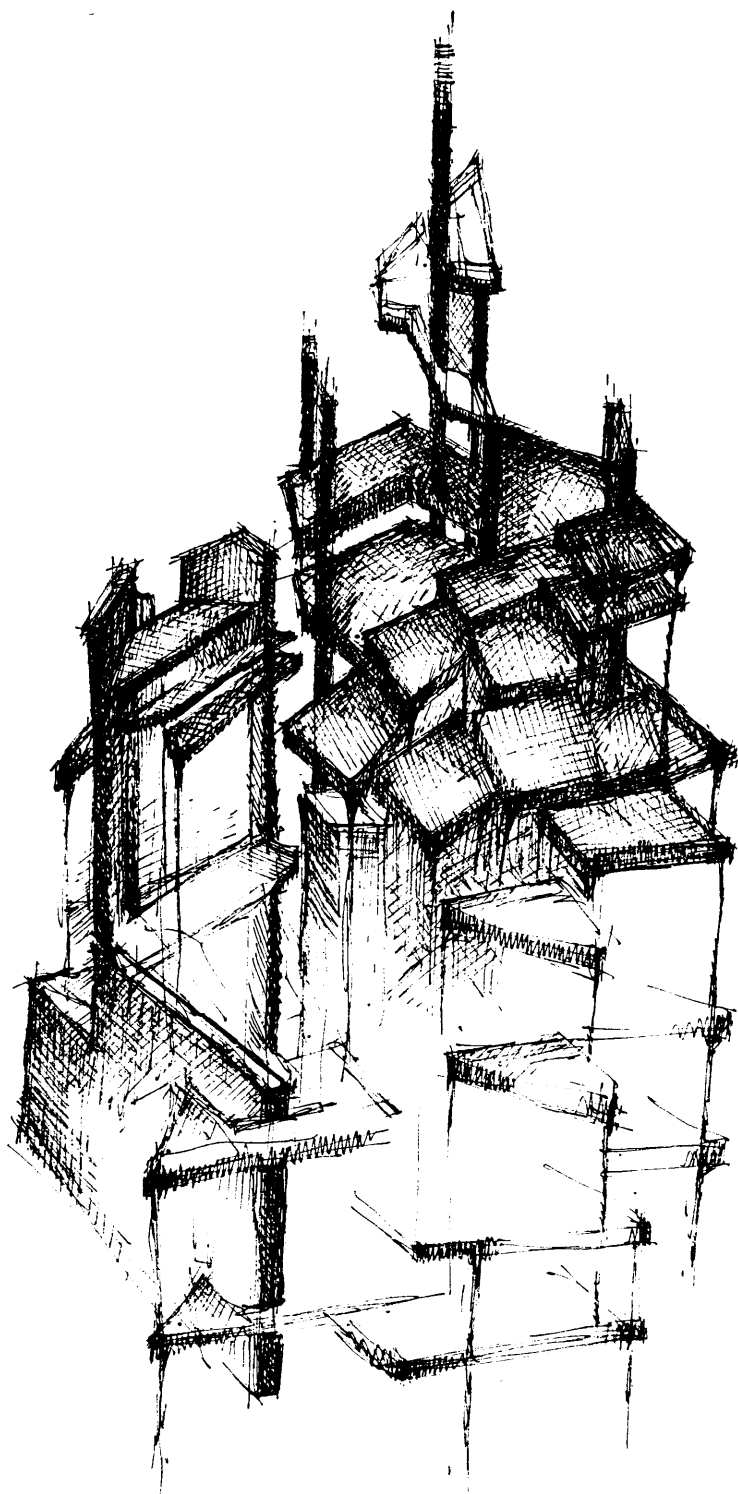


fig. 42.1 Sketch by author, early schemetic design of museum.



## **Museum for Children**

I chose a children's museum for the architectural project of my thesis. The distinguishing characteristic of contemporary children's museums is the physical interaction encouraged by the museum's program. This "hands-on" approach to exhibits is relatively new in museum design and creates an environment for children to be stimulated through all their senses and to learn by their own deduction. Architectural space, both inside and out, can support the museum's program as an expression of learning by sight, touch, smell, sound and taste. The challenge of this approach to learning is allowing for the uniqueness of each child's ability to reason and question.

The agenda of this particular children's museum is to inform and address issues of ecology in the natural environment. It proposes to educate and entertain children between the ages of two and twelve and their families. The museum acts as a nature center for the community and its school system. Interior and exterior spaces relate to the museum's exploration of the physical elements of the Earth; air, water, rock, soil, and to plant and animal life. The concept of architectural design being harmonious with its environment reflects an attitude consistent with the museum.

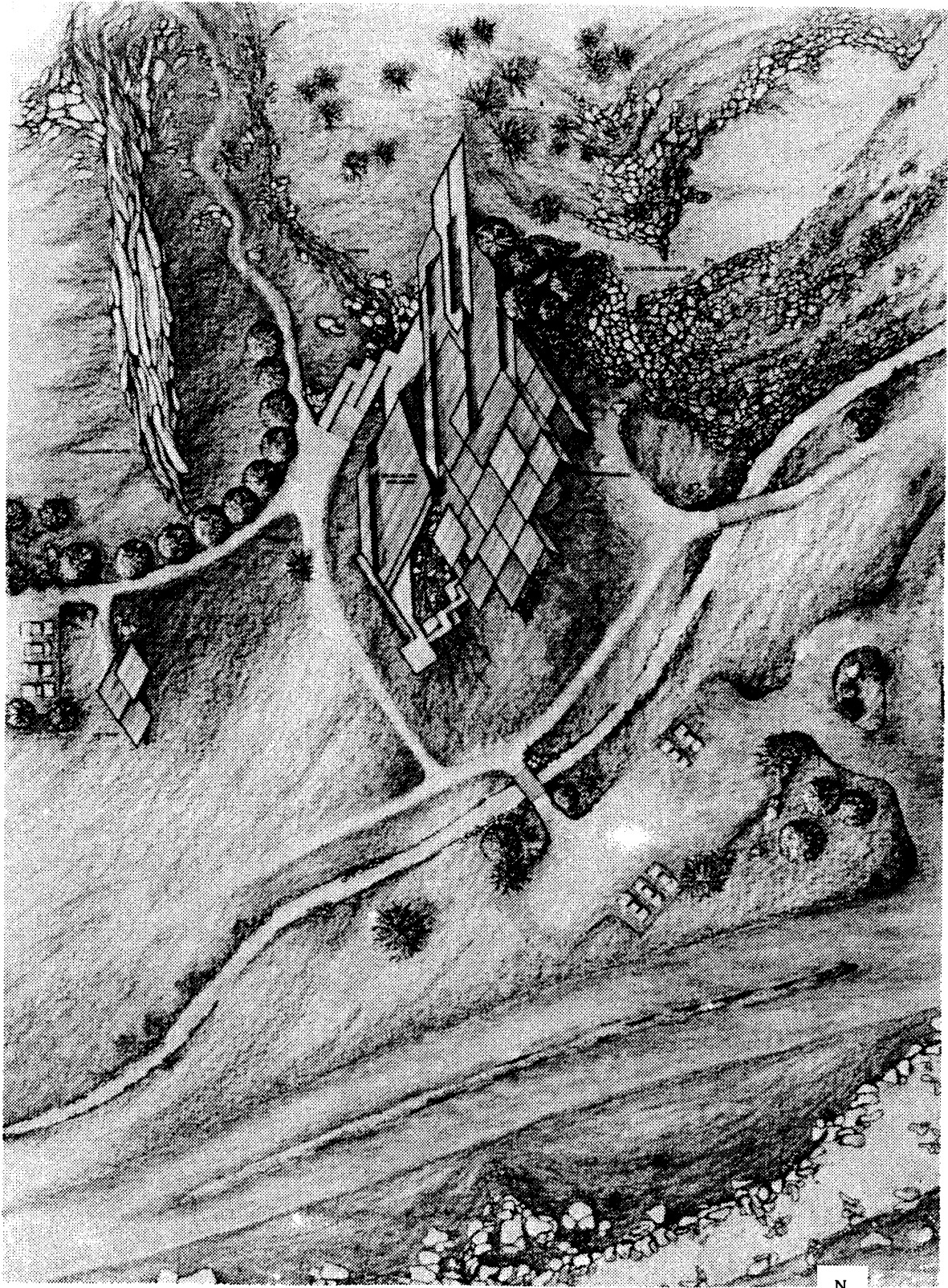


fig. 44.1 Site Plan of museum and Settler's Park.

## **The Program**

The program is for an approximate 20,000 square foot facility to house the museum's exhibits, offer demonstration areas, classrooms, and workshops, provide a library space and a computer center as well as offices for the administration of the museum. A cafe with a kitchen and a retail store are to provide additional support to the museum.

The facility is divided into three separate buildings. The primary one houses exhibits, demonstration areas and a kitchen / cafe. Another building facilitates a library and a computer center, while the third provides a retail store for the museum.

Though the Exhibit Building and Library Building are extremely close to one another, they are distinct buildings. Two separate exterior staircases and an entrance bridge join the buildings together. However, a stream runs through the gap between them and defines their separation.

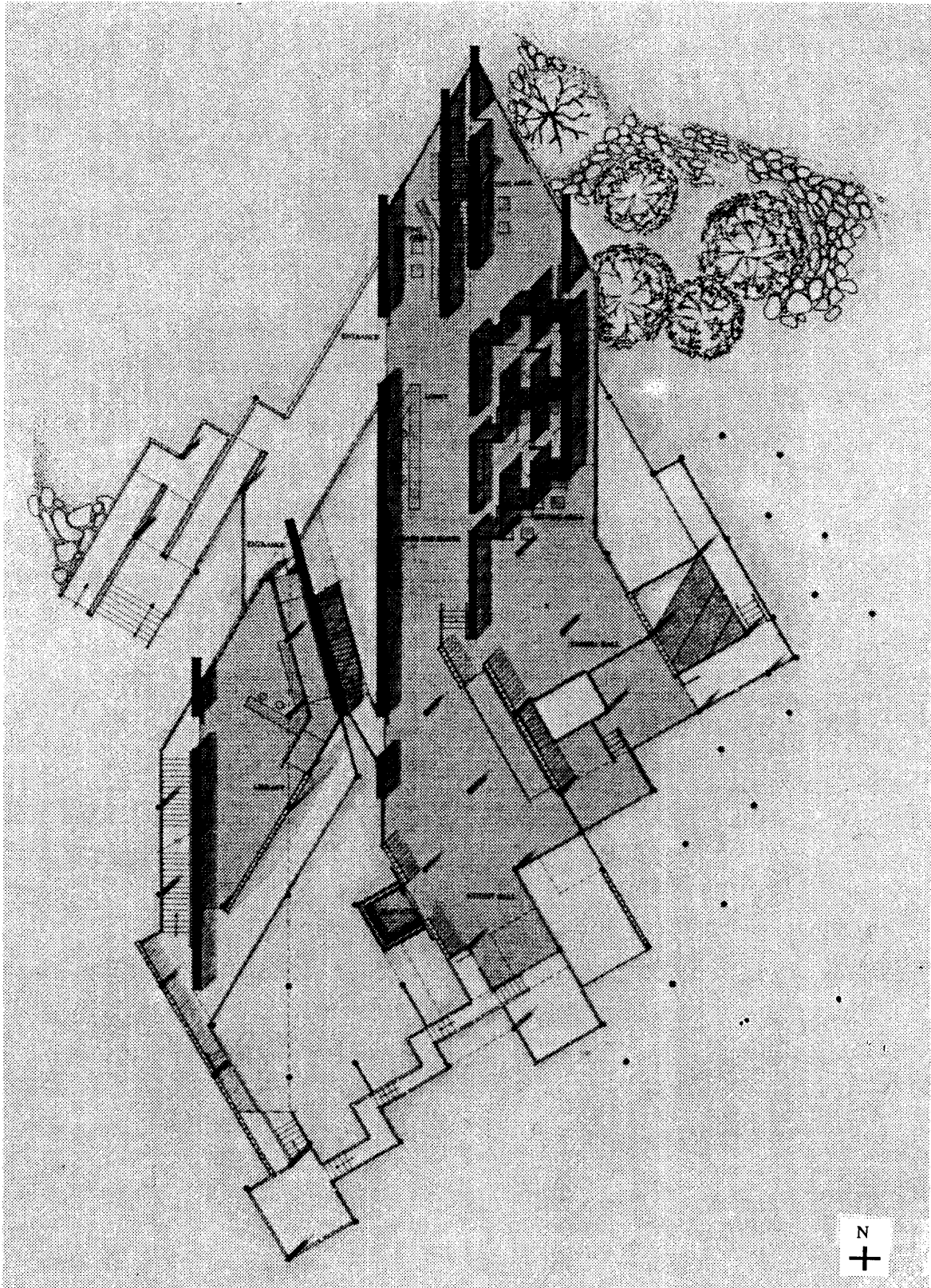


fig. 46.1 Second Floor Plan

The entry into the Exhibit Building is off the Entrance Bridge which spans the stream. The spacious Lobby with a receptionist's desk greets visitors and provides an orientation area for school groups and families to gather and plan their outing. Toilets and public telephones accessible from the Lobby serve the Second Floor, the main entry level to the museum. From the Lobby there is direct access to all other floors and exterior doors leading to the East and West sides of the building.

Extending from the Lobby, two large Exhibit Halls wind eastward and open out with smaller exhibit areas breaking away. From these more intimate spaces is a view of Boulder Creek and Flagstaff Mountain beyond. Off the west side of the exhibit space, the stream which passes between the buildings is in full sight. From this level, the stream is observed while being protected. The exterior Climbing Stairs leading to the Library Building is accessible from this exhibit area as well as the Canyon Stairs, both leading to upper floors. The exhibit spaces open up on the West side with a balcony edge to the Cafe below. Activity in the Climbing Garden outside the Cafe can also be viewed from this level.

The Second Floor of the Library Building is the Computer Center for the museum. From this communication with other children's museums and nature centers throughout the world, ecological issues of the environment are given a global context.



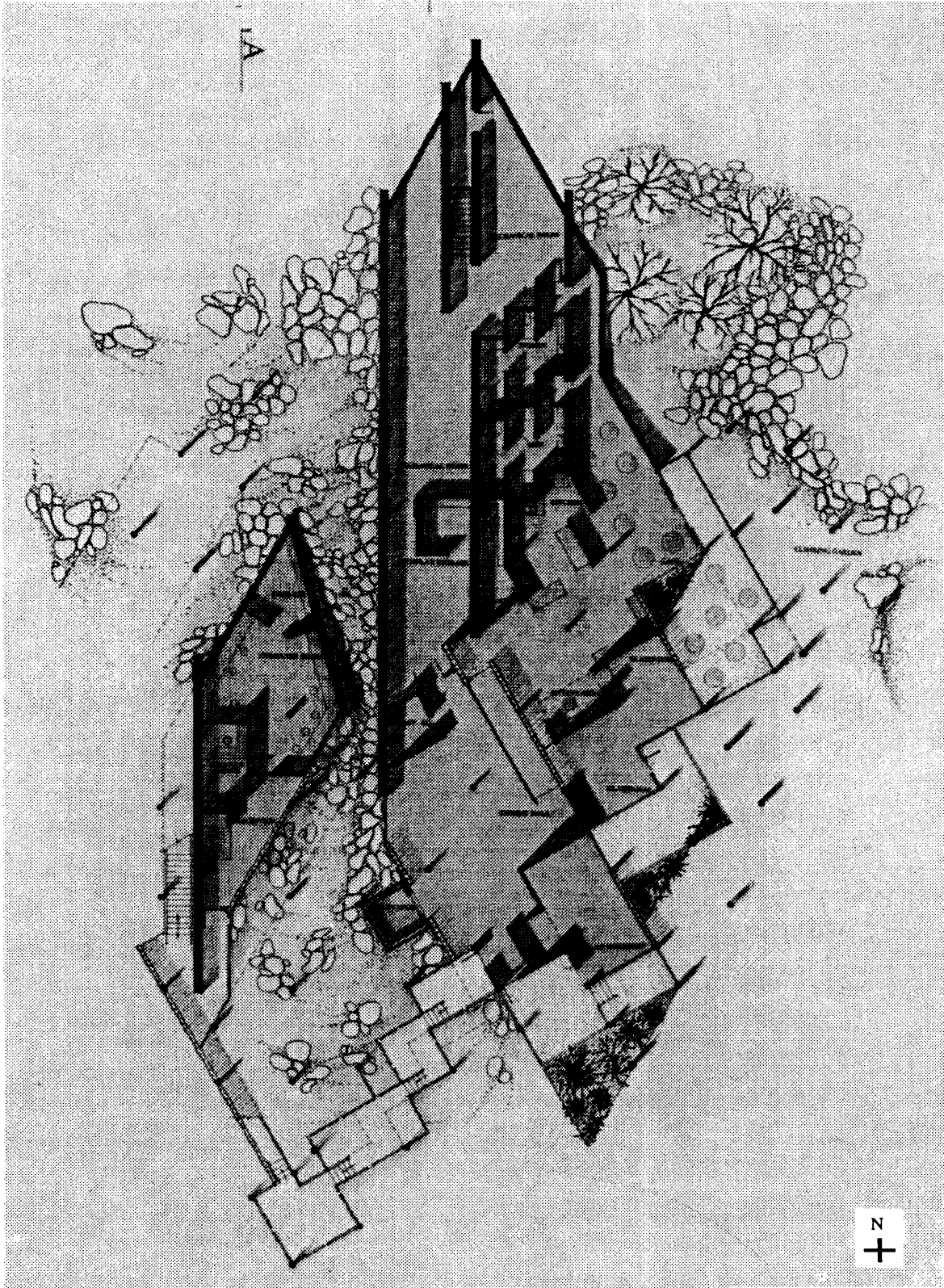


fig. 48.1 First Floor Plan



The Demonstration Area and the Display Workshop on the First Floor of the Exhibit Building is accessible from the museum by the elevator. From this area, the Climbing Stairs lead outside, over the stream, to the Computer Center in the Library Building. On this ground level floor, the stream is viewed close up and felt through glass walls. This floor also has the Kitchen and Cafe with public toilets and an outside access with the cafe seating extending into the Climbing Garden. Two classrooms are accessible off this area to serve school groups and community activities as well as museum functions. All of the large Storage spaces and the Mechanical Room is on this lower floor.

The Library Building's First Floor is primarily for the administration of the Library and Computer Center. It is accessible at ground level and connected to the Computer Center and Library above by the exterior staircase on the West side of the building.

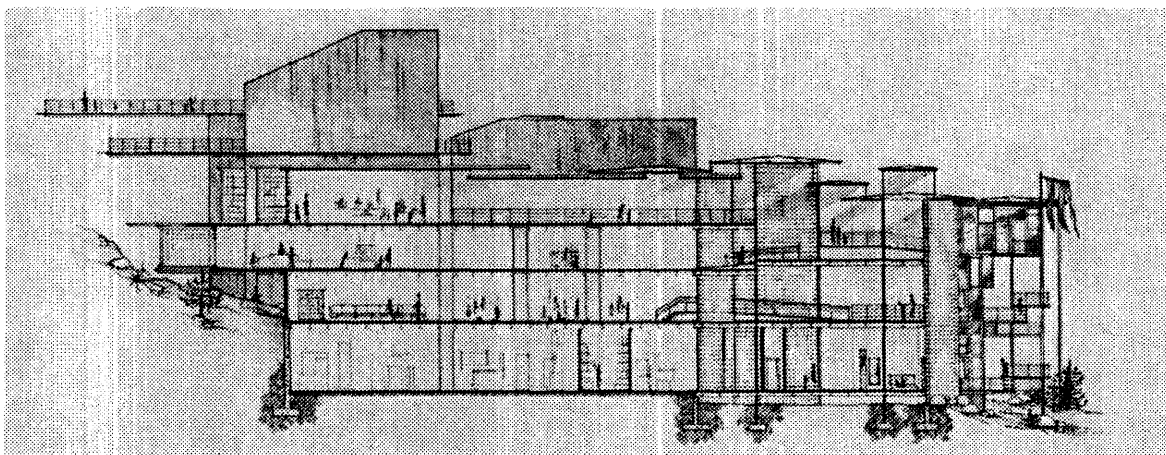


fig. 49.1 Section through Exhibit Building

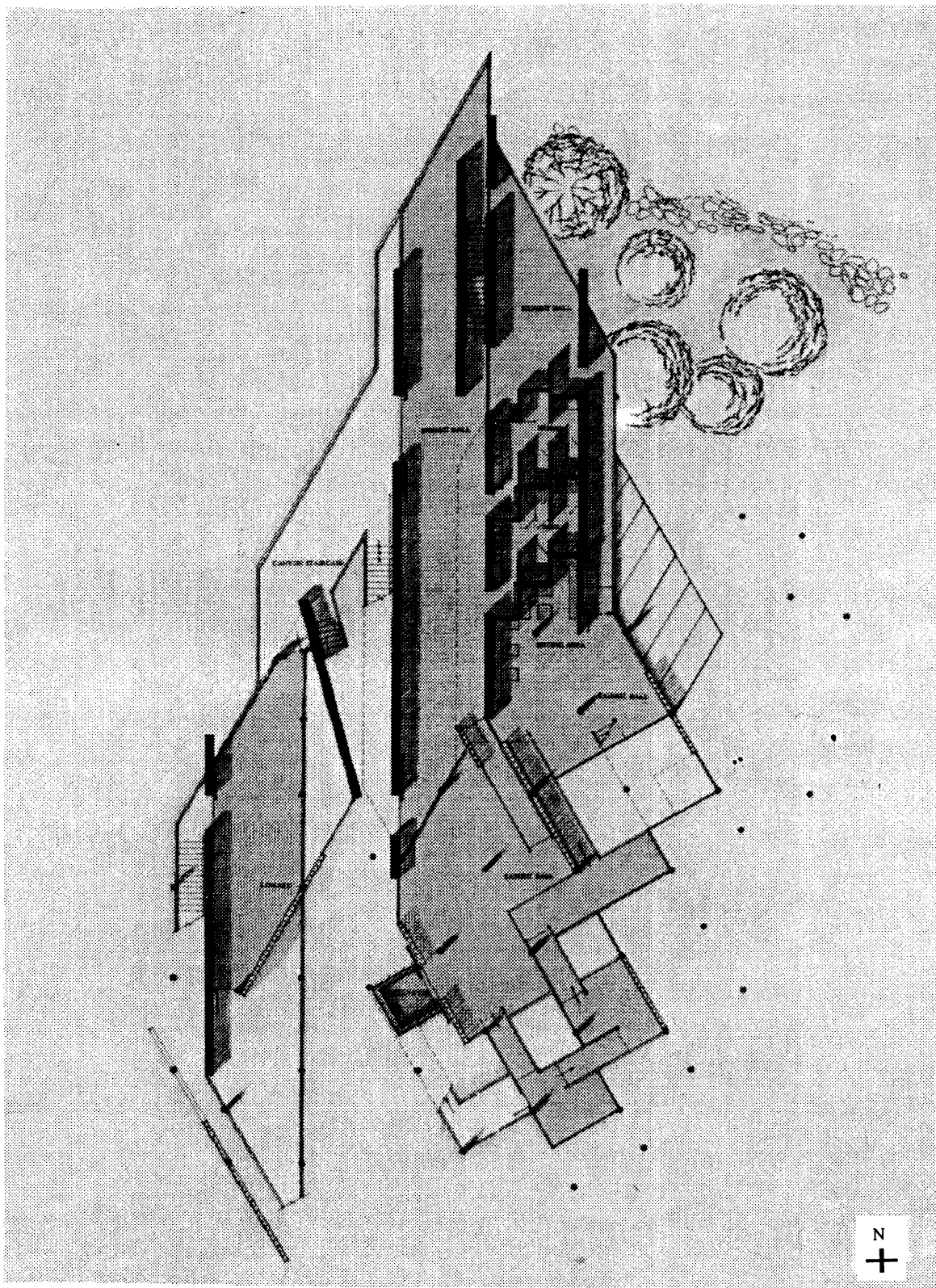


fig. 50.1 Third Floor Plan

The Canyon Stairs lead to the Third and Fourth Floors from the entry level. The front bridge landing links the Exhibit Building with the Library Building over the stream below and is open to the elements. The Canyon Stairs are also designed to channel the air currents and to intensify sounds and smells from the stream. Off this open bridge landing, the Third Floor of the Exhibit Building houses additional exhibit spaces with toilets for the floor. The northern Exhibit Hall is opened to the Lobby below. This floor is primarily exhibit area, large spaces breaking into smaller ones at the southern edge. Flagstaff Mountain is viewed from the all exhibit areas.

The Library is on the Third Floor of the Library Building and is open to the Computer Center below. The floor extends outside over the stream with a continuous balcony and follows a path down the Climbing Stairs. This staircase leads down to the Exhibit Building. There is another staircase running along the outer wall which connects the Library to the Computer Center.

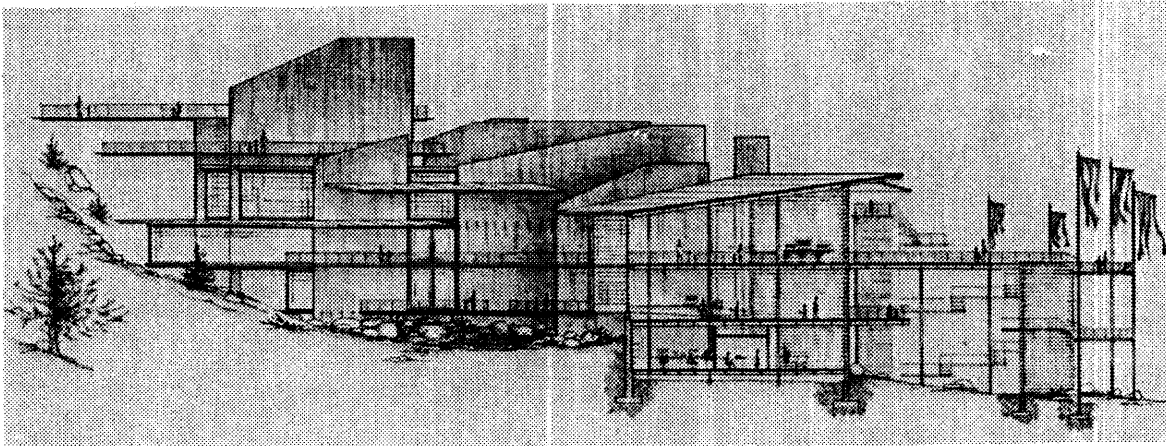
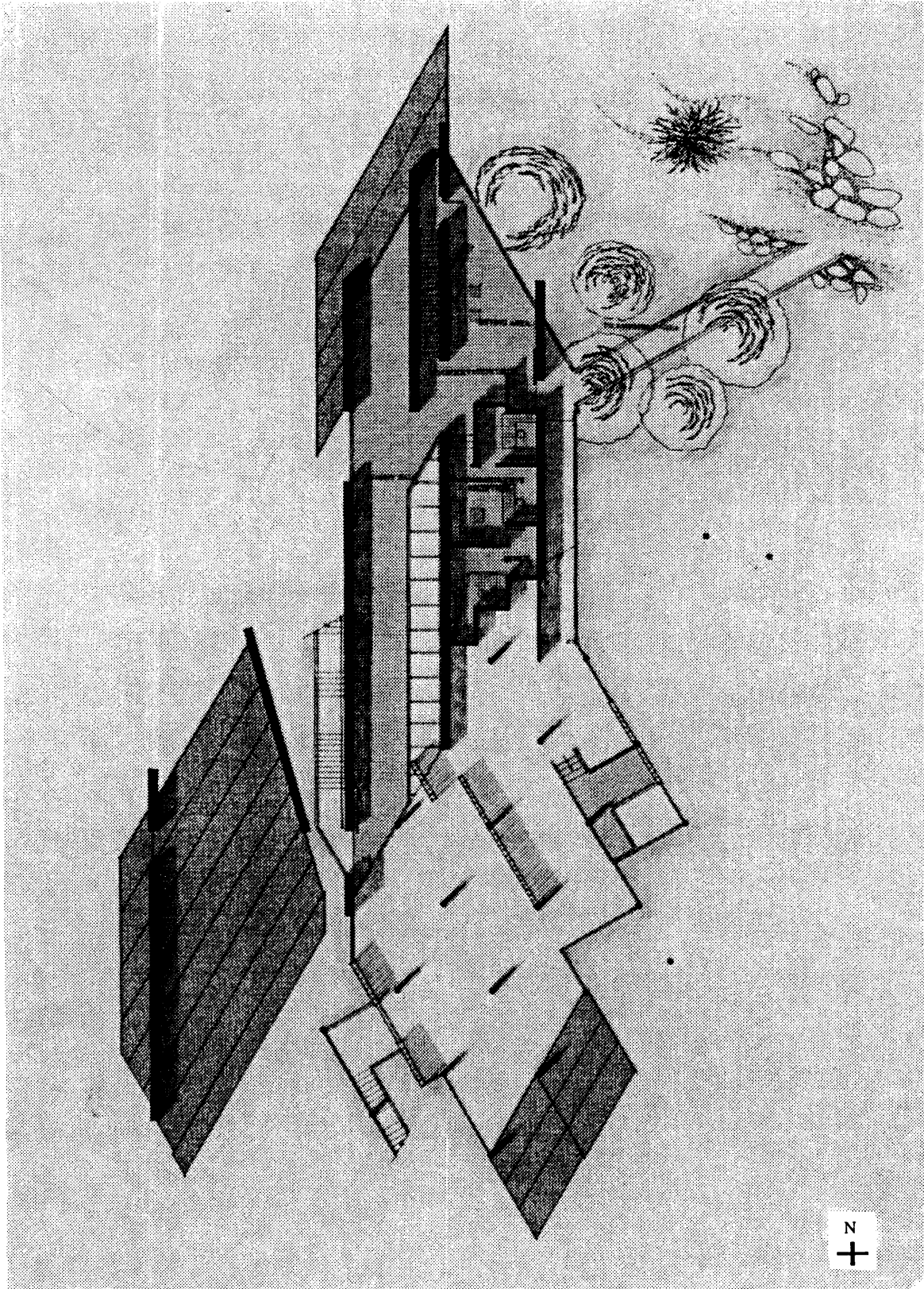


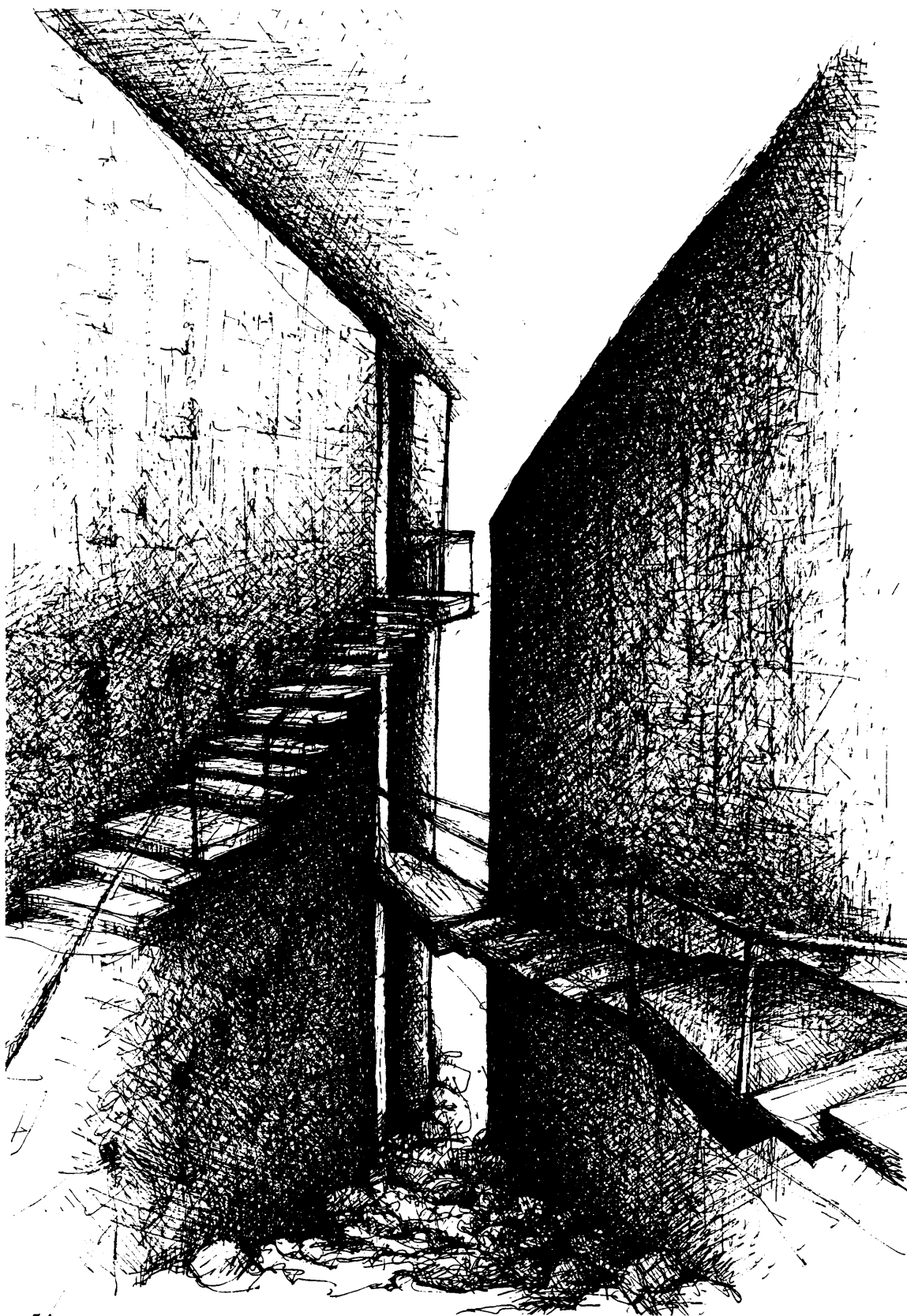
fig. 51.1 Section through Library Building



By continuing up the Canyon Stairs off the front bridge landing, the Fourth Floor Exhibit Hall is on the highest exhibit level within the building. A view of the Rocky Mountains is spectacular from this elevation. The exhibit space on this floor is smaller and more intimate than on previous floors. It is open on the south side and pulls away from the eastern wall revealing the activity below. The Administration Offices and Volunteer Area are secluded on this quieter floor. There is a staircase which connects all the floors near the office area and continues up to the Observation Decks. Access to the outside Assembly Area is off this top floor by a bridge through the trees of the lower hillside Climbing Garden.

There are two Observation Decks, one on top of the other. Both decks stretches northward to connect visually with the Red Rocks up the hill. The lower of the two decks views westward to the Rocky Mountains and from the highest deck the outdoor Assembly Area and Boulder beyond is in view. From these Observation Decks, the visitors to the museum can grasp the magnitude of the natural setting.







From its conception, this facility was to encourage exploration by a creative circulation for all visitors, regardless of their age or physical limitations. Climbing the hillside of the rock rubble, exploring the Red Rock formations, or splashing down the Boulder Creek, one is always aware of the physical strength and coordination it requires. This is a museum for small children who are too young, in many cases, to enjoy the site themselves. Often, family members coming to the museum with the children are also unable to venture up the hill and rocks. The design concept, inspired by the site, is "to climb". The experience of climbing, the adventure and thrill of it all, had to be incorporated into the circulation and spacial values throughout the museum.

## **Circulation and Spacial Values**

The Canyon Stairs are probably the most dynamic circulation feature of the museum. It is a cantilevered system, each flight extruded from a huge dark concrete wall, together forming a canyon. These separate flights of stairs cross over each other midway and disappear into the same break in the wall system at different levels. This stair system is open to the sky above and the stream below which runs between the two walls. Its gives the space its sounds and smells and a sense of danger. The bridge landing is suspended between the two concrete walls and aligns above the Entrance Bridge. It joins the Exhibit Building with the Library Building at the Third Floor while extending a platform over the stream to enjoy the experience. The canyon space, made by

the closeness of two concrete walls, is exaggerated as the walls become closer down the slope. The water below rushes faster and the sound intensifies as they create a funnel. The canyon channels the air currents as they pass through, up the hillside in the summer heat and down toward the creek in the cold winter months. The sounds of the stream are echoed as they reverberate against the concrete walls. Smells of the water and of the Earth are intensified in this canyon space and celebrated by the experience.

Just as the Canyon Stairs evokes the intensity of the rock, the Climbing Stairs draws its inspiration from the sense of reaching for the sky. These two stairs systems also bridge the Exhibit Building with the Library Building, but that is where their similarities stop. The Climbing Stairs are made from the floor plates breaking and moving horizontally, contrasting the vertical character of the Canyon Stairs. The metal plates forming the stairs seem to float above each other as they wind their way over the stream to make their connections. The numerous landings, designed for appreciating the journey, offer opportunities for displays. Their direction appears aimless at times. The breezes and the smells of the seasons are to be enjoyed along with the view of Boulder Creek and Flagstaff Mountain. This staircase does not focus on its destination but rather celebrates the experiences of the journey. From the lower flight of stairs, the Exhibit Building's first floor extends westward, up over the

stream and touches the free standing glass block wall. It eventually joins the Second Floor of the Library Building, making a connection between the Demonstration Area and the Computer Center. Both the museum and the schools use these areas jointly for educational instruction. The upper flight of stairs is a connection of tiny metal platforms floating above the first flight. With these stairs, the Exhibit Building's second floor is blown up into the sky and lands on the extended balcony of the Third Floor of the Library Building. This sequence brings access to the Library directly from the entry level of the museum. Where the Canyon Stairs are bound and directed by the heavy dark walls, the Climbing Stairs feel free and careless in the air. These two major circulation paths were conceived together and strengthen each other by their contrast.

The elevator joins the first three floors of the Exhibit Building. It is glazed on three sides, the stream which separates the buildings passes by it and its southern view provides a backdrop for the children on the Climbing Stairs. The elevator is situated in the middle of a glass block wall and looks over to another glass block wall which catches the afternoon light. Over the elevator shaft is a landing, the highest point of the Climbing Stairs from which to view the Rocky Mountains and spectacular sunsets.

The circulation and the spacial values of the museum were always conceived as one. In the northern part of the Exhibit Building where the concrete walls emphasize the verticality of the space there is the only staircase which spans continuously from the ground level to the highest observation deck. It is squeezed tightly between dark concrete walls and offers no restful landings. The circulation is used to quickly reach the Administration Offices from the Entrance Lobby. It is also the only staircase to the Observation Decks where the sky and the view is the finally.

In direct contrast to the northern staircase is the ramping system at the southern edge the museum. It is the connection to the smaller exhibit areas off the main floor plates as they break apart and drift out. This system of ramps provides the handicapped visitors the same access to all the areas as any visitor. The ramps also allow for a gentle elevation change with landings as exhibit areas. As these smaller areas rise with the ramp, the spaces below are revealed and the activity of one flows into the other. The spacial values of this southern edge celebrate the breaking apart of a horizontal displacement responding to the pull of Boulder Creek

Both buildings have exterior circulation running along the side of a huge concrete wall. They are both made of metal, supported by the steel column system and press against the exterior wall. This is not a similar experience

as traveling along the walls in the Canyon Stairs. There the steps are of concrete, heavy and stable, definitely of the wall. On these ramps and stairs, the sound of shoes is constant and the feeling of hanging on to something strong gives these spaces their unique character. These stairs are the Library Building's primary circulation between floors and have a view of the Red Rocks in the park. This staircase is in the bright afternoon sun and being against a dark wall, the heat of the sun is intensified. With the exposed staircase against the West wall, entering visitors get a glimpse of the activity within the museum. These ramps are on the Exhibit Building's East wall and face out to the rock rubble hillside and down to the Climbing Garden. They are in the shade of the trees and hill in the morning and the building in the afternoon making the concrete wall feel constantly cool and wet. Because the ramps and the stairs are exposed along sides of exterior walls, the activity within the museum spills over into the exterior spaces, the inside overlaps with the outside.

The outdoor Assembly Area is amid the rock rubble on an existing plateau created by an early mining expedition. This area is vital to the museum's program and made handicapped accessible by an exterior bridge. At the level of this bridge, the visitor is in the tree tops, experiencing the branches and leaves in the world of birds and other tree dwellers.

The entrance to the museum from both the Parking Lots and the Bike Path introduce the visitors to the formal relationship between the architecture and the Red Rocks on the site. The strong concrete walls have a respectful dialog with the Red Rocks, neither one intimidating the other. These are noble elements and the foundation to the character of the built site. The ramps and steps as well as the Entrance Bridge introduces the metal plate floor system stretching between the huge concrete walls. The hillside stream rushes under the bridge and between the two buildings, pushing against the wall and becomes the focus of the visitors. The museum is entered through a break in the concrete wall.

The entrance Lobby is graciously open at first but becomes long and narrow, emphasizing the direction and formality of the concrete walls. As the visitors travel through the Lobby, the metal floor plates leave the concrete walls allowing the exhibit spaces to expand out into the land and sky above.



Exiting the museum at the ground level is encouraged at the Cafe with the outdoor eating areas inviting visitors to enjoy the site. The Climbing Garden is accessible from this location as well. The Second Floor of both the buildings exit off the Entrance Bridge with an additional exit on the eastern side of the Exhibit Building. The bridge over to the outdoor Assembly Area extends from the higher floors of the Exhibit Building.

The primary exit from the museum complex is a return to the entrance Lobby and a passing over the stream on the Entrance Bridge. After experiencing the freedom of space in the Exhibit Halls, the visitor returns to the formal discipline of the lobby area. A farewell to the stream and one more view of the Red Rocks of Settler's Park and the visitors leaves the children's museum.

Located at the edge of the Parking Lot, the Gift Shop reappears along the path. It greeted the arriving visitors as the first hint of the museum and now encourages one last stop. The Gift Shop Building is of the same design vocabulary as the smaller exhibit areas in the Exhibit Building. This tiny building reaches out to the community as a retail store for exceptional toys and educational tools for understanding the harmonious nature of the environment.

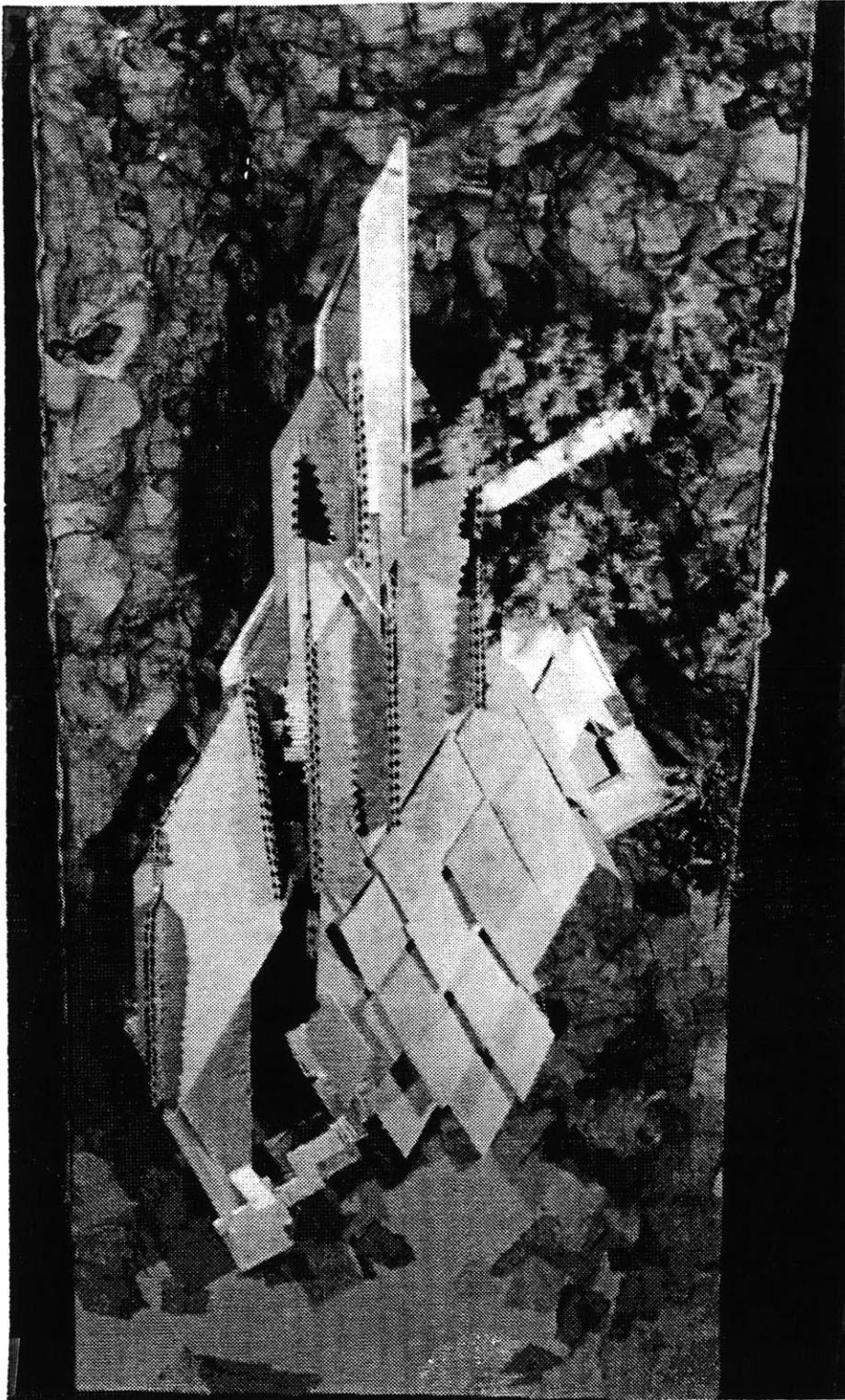


fig. 62.1 Large model of museum, Roof top view.



fig. 63. 1 Large model of museum, Climbing Stairs at South Ele.

## **Structural Systems & Materials**

The ridge of Red Rocks along the Rocky Mountain foothills had to be the first consideration in choosing a structural system. As a harmonious reference to these giant rocks, reinforced concrete bearing walls of equal integrity and strength were designed, twenty inches thick and averaging forty feet in height. The formation of the Red Rocks is clearly read from the alignment and thrust of this ridge. Therefore, it was important to retain an honesty of the process of construction with these concrete walls. In contrast to their strength, the Red Rocks have an innocence about them. They are sharp and relatively young as rock formations. Relating to this quality of the rock, the concrete is darkened, its surface left rough and exposed inside as well as out. On the exterior, the concrete's roughness lends itself to imperfections from weathering, mosses will grow and stains will occur from the metals it comes in contact with. The load bearing walls encase heating elements and effortlessly support the floor plates spanning between them. The connection of the metal plates is expressed with a large steel fastener through the concrete wall. These fasteners indicate the support of a floor plate and stain the walls which are exposed to the exterior elements. These walls are continuous through the floors, up past the roofing system, and into the sky. They are intensely accurate as they project from the hill, only one moves out of alignment responding to the impact of the stream.

The other great natural force of the site is the phenomenon of deterioration. This is undoubtedly the strongest force in nature but it happens gently, without a lot of fanfare or fuss. The celebration of this phenomenon is freedom; the breaking into smaller parts and the introduction of light. Where the mountainous rock is majestic, it is static unto itself. It is the deterioration of the rock, the falling and crumbling, it is erosion which brings change. It softens the rough and introduces light where there was only solidness before. In order to sustain the notion of deterioration, the second structural system of the building is steel columns and beams. The column grid is an overlay of two grids, one which continues in the direction of the concrete walls and the other which responds to the topology of the site. Metal contrasts the character of concrete in much the same manner that breezes and streams contrast the rocks. The material properties of steel plates supported by steel columns lend itself to the concepts of fragmentation and deterioration while retaining a structural strength .

The floor system is made of hatched steel plates sandwiching a core of concrete with heating elements. These plates span the bearing walls until the walls are replaced with the structural columns. The floor, restrained by the vertical concrete walls, suddenly bursts out into its own direction. Vertical space becomes horizontal with the plates breaking away and responding to the gravitational pull of deterioration.

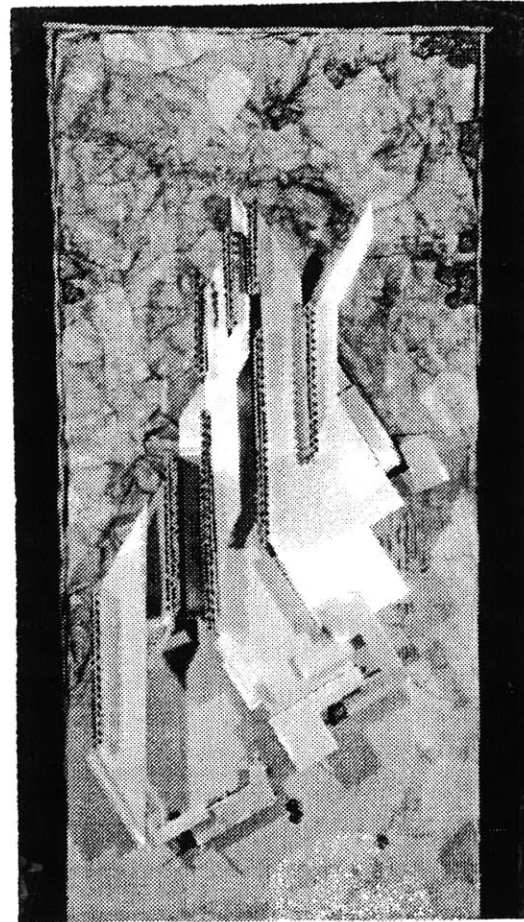


fig. 65.1 Schematic model of concrete wall and metal plates.

The roof system has an obvious relationship to the floor. They are both of metal and are supported by the two structural systems in a similar way. However, the roof is of a much lighter weight metal; copper sheeting. Like the floor, it is held tightly between the concrete walls until it too breaks away and takes on its own character. The roof reveals its leaflike structure of diamond shaped panels expressing the phenomenon of tree cover. Spanning the same structural columns as the floor, they relate to the grid in the form of a diagonal diamond. Light is brought into the interior spaces as the roof panels separate from one another and respond to the sky breezes. Sunlight is continually warming the spaces and celebrating the Colorado sky. The copper patina enriches the natural color palette of the building and stains the dark concrete walls in a natural dialog of materials.

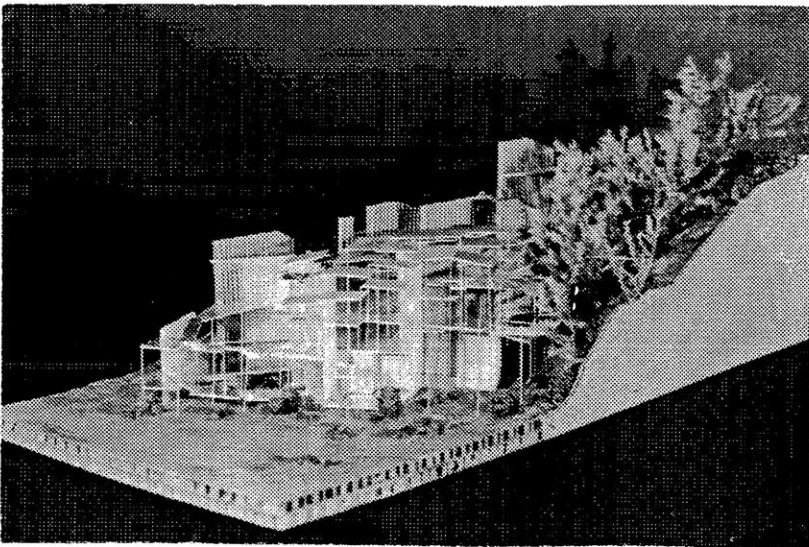


fig. 66.1 Model of museum.



Another contrasting relationship between materials is between the glass block and the solid blackened concrete. They are both wall systems which conform to a set of rules and are continuous through the floors. The glass block walls align with the grid of the floor and demonstrates an almost whimsical approach to conformity. The transparency of the material allows for a hint of the activity behind the partition. It catches the most subtle light and the illusive character of the blocks sparkle like light on the stream. There is one wall which breaks from the building, it stands alone with only the Climbing Stairs acknowledging its defiance. It is a freestanding glass block wall. This wall glistens all day long in the sun light, and rain drips down its exposed surface. The glass will take on streaks of amber as the rusting steel from the Climbing Stairs stains the wall.

Natural phenomenons will enrich the textures and add depth to the color palette with time. The architecture stands in the site as another expression of the natural landscape.

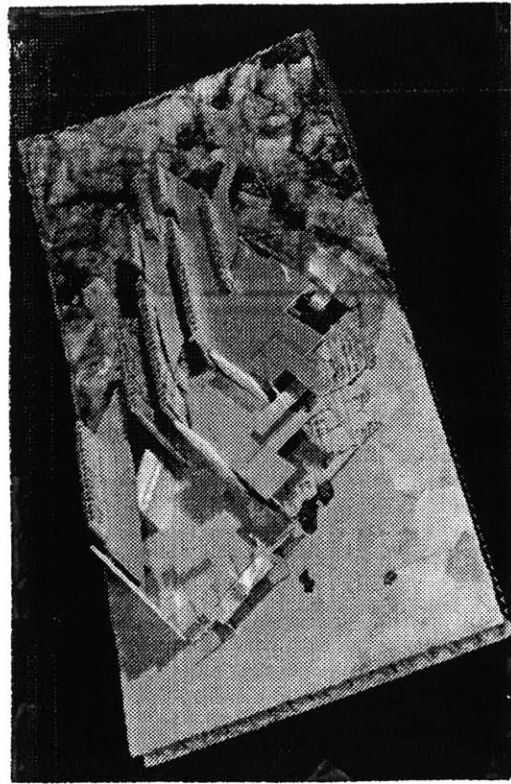


fig. 67.1 Schematic model.



fig.68.1 Red Rocks in Settler's Park.

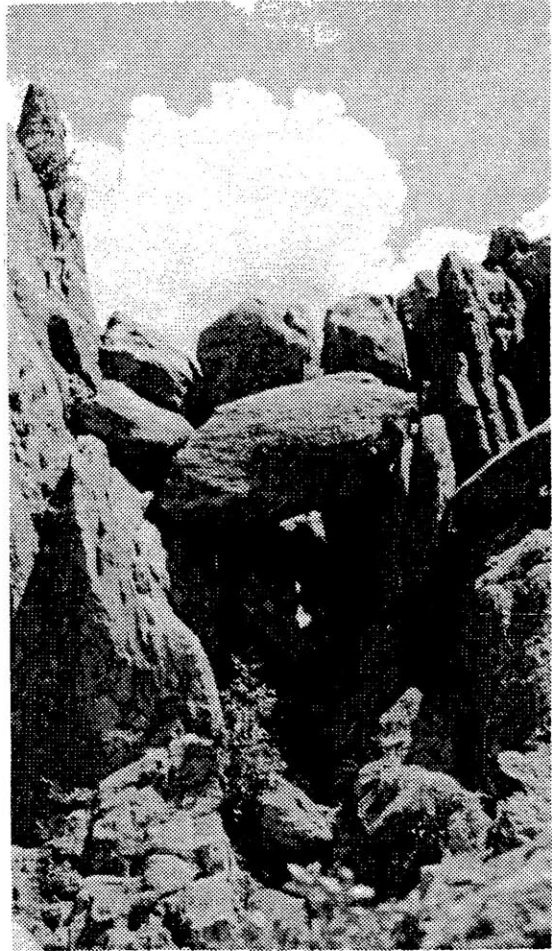


fig. 68.3 Red Rocks in Settler's Park.

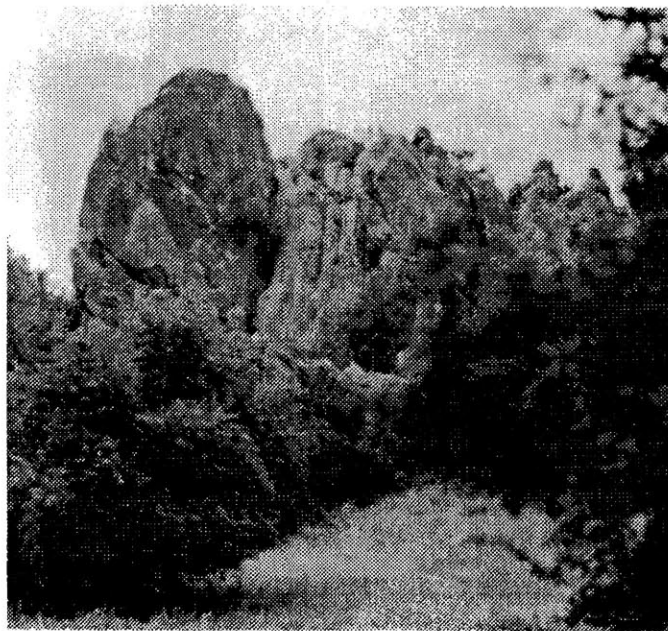


fig. 68.2 Red Rocks in Settler's Park.

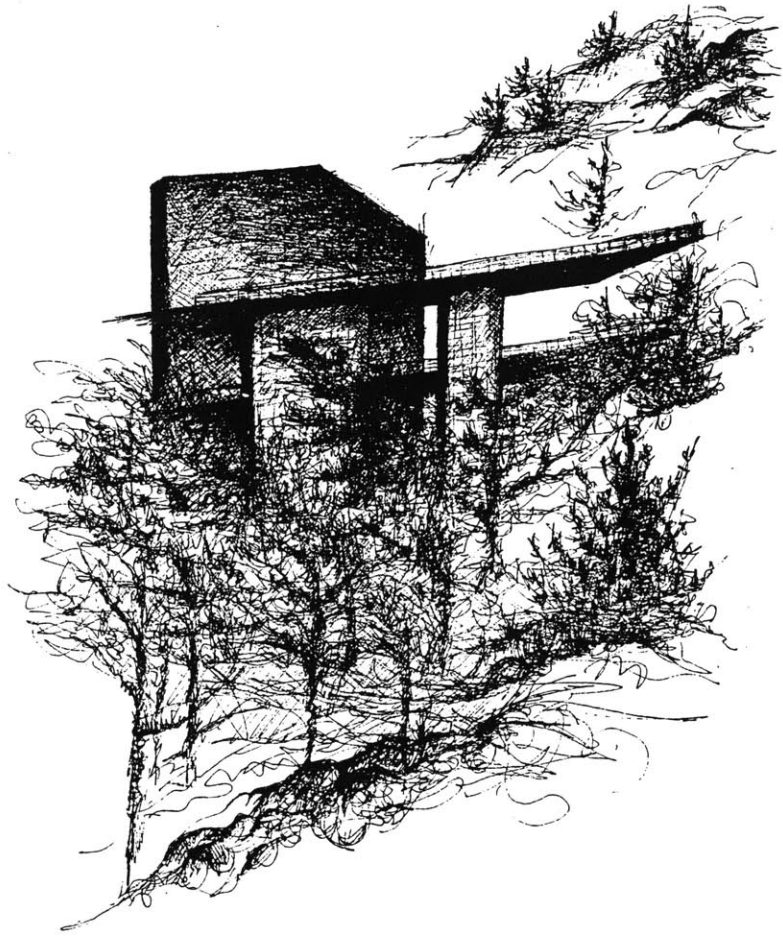


fig. 69.1 Sketch by author, Observation Decks from the hill.

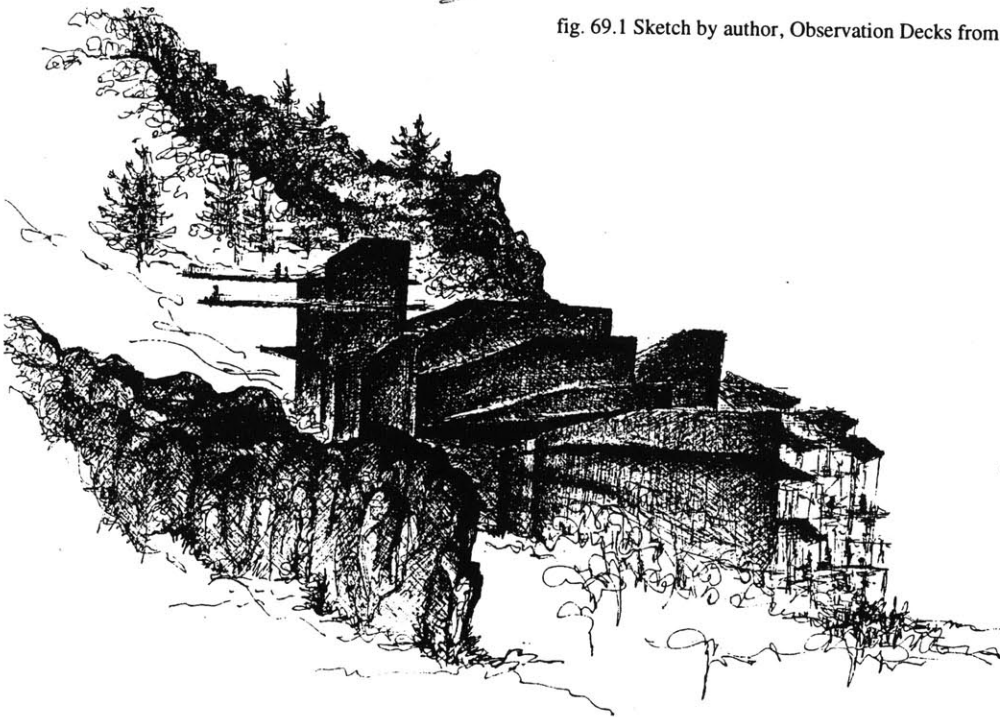


fig.69.2 Sketch by author, Museum from the west Parking Lot.

## **Landscape & Exterior Spaces**

Within the context of this thesis, the architecture is only one element contributing to the harmony of the environment. The quality of the exterior spaces on the site are as important as the built form. The introducing of the architecture and the receiving of the structure into the site are a result of the relationship between the built form and its exterior spaces.

Approaching the museum from the West Parking Lot, the Red Rocks in Settler's Park are presented full faced with only a hint of the museum behind the trees. The path to the entrance engages the visitor with the gentle slope of the hillside and sets a long view up the grade to a larger display of the giant Red Rocks. The stream which eventually passes through the buildings begins subtly at a higher level up the hill. It twists down the slope, gathering rocks and sticks along its way until, almost suddenly, it becomes a stream. Visitors of all ages can enjoy the stream from the Entrance Bridge as it passes under and seemingly separates the mighty concrete walls. The stream appears to change its character as it passes between the walls. It splashes with force against its constraints and makes a rejoicing sound to welcome all who visit the museum. As suddenly as it began, it dissipates quickly as the slope softens under the Climbing Stairs. This stream bed is vulnerable to erosion and the design intent is to enjoy and learn by the stream but not interrupt its balanced system in the landscape.

On the eastern side, the Climbing Garden offers the visitor an area to actively participate with nature. This area is filled with trees and rocks for climbing, for sitting under, and for feeling a oneness with the Earth.

The Assemble Area is an outdoor space to seat at least one hundred. It is situated on the plateau atop the rock rubble hillside. This plateau was created many years ago by the mining of iron ore in the hill and is typical of many exposed sites which are vulnerable to severe erosion. From this perspective, the museum can not only speak about careless abuse of the land but also the attitude of the society which accepts this behavior.

The exterior spaces developed in this project take on an invaluable relationship in the museum's agenda to educate the children and their families about harmony in the environment.

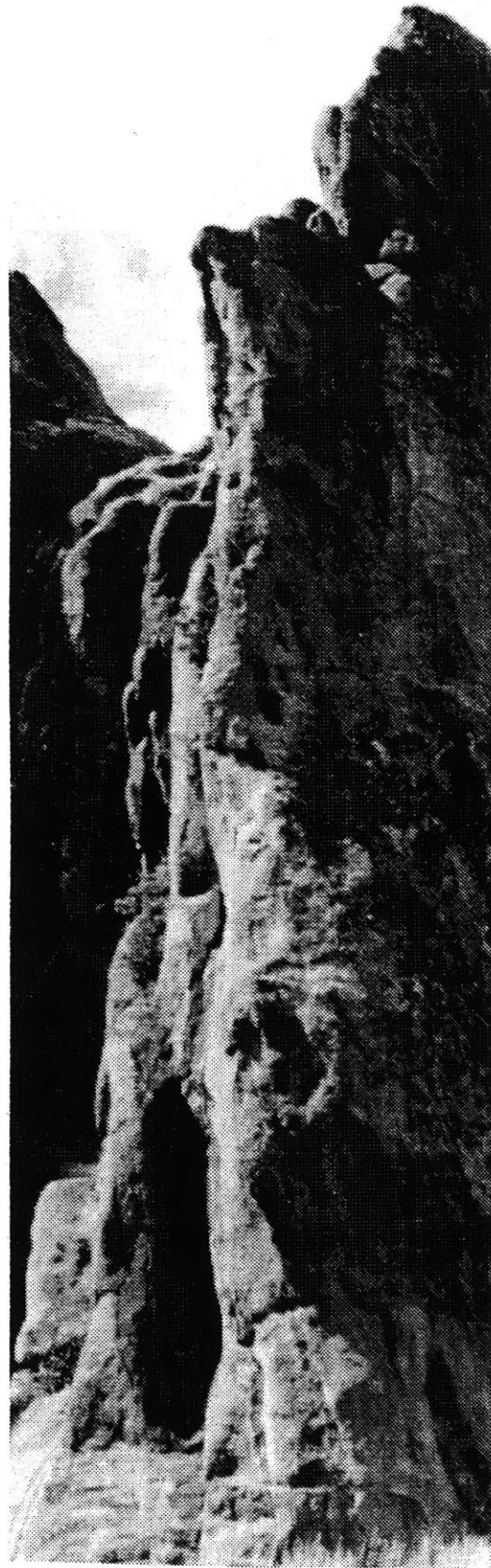


fig. 71.1 Red Rocks in Settler's Park.



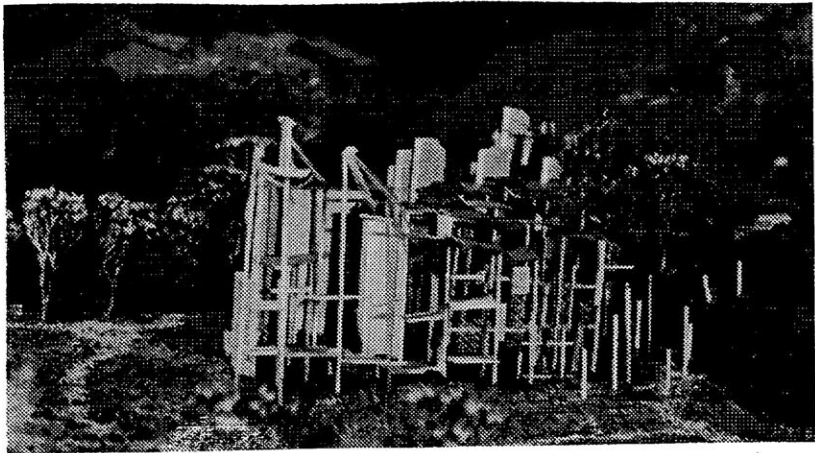


fig. 72.1 Site model detail, southeast elevation.

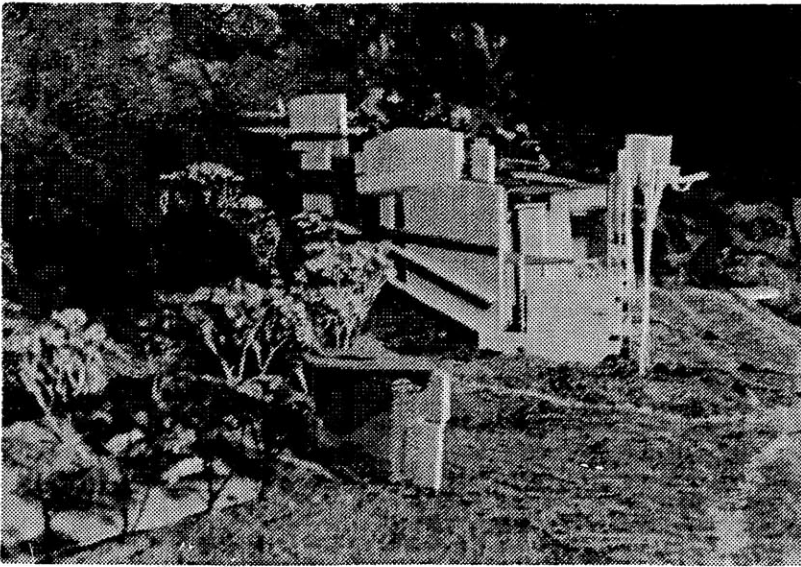


fig. 72.2 Site model detail, west elevation.

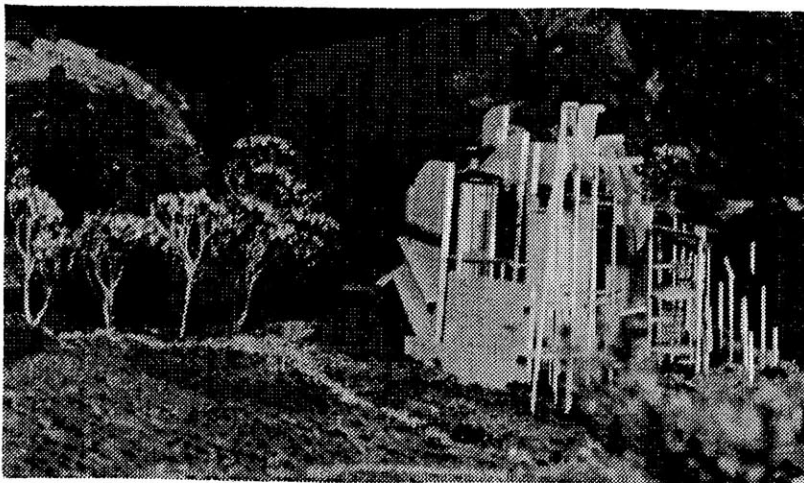


fig. 72.3 Site model detail, southwest elevation.



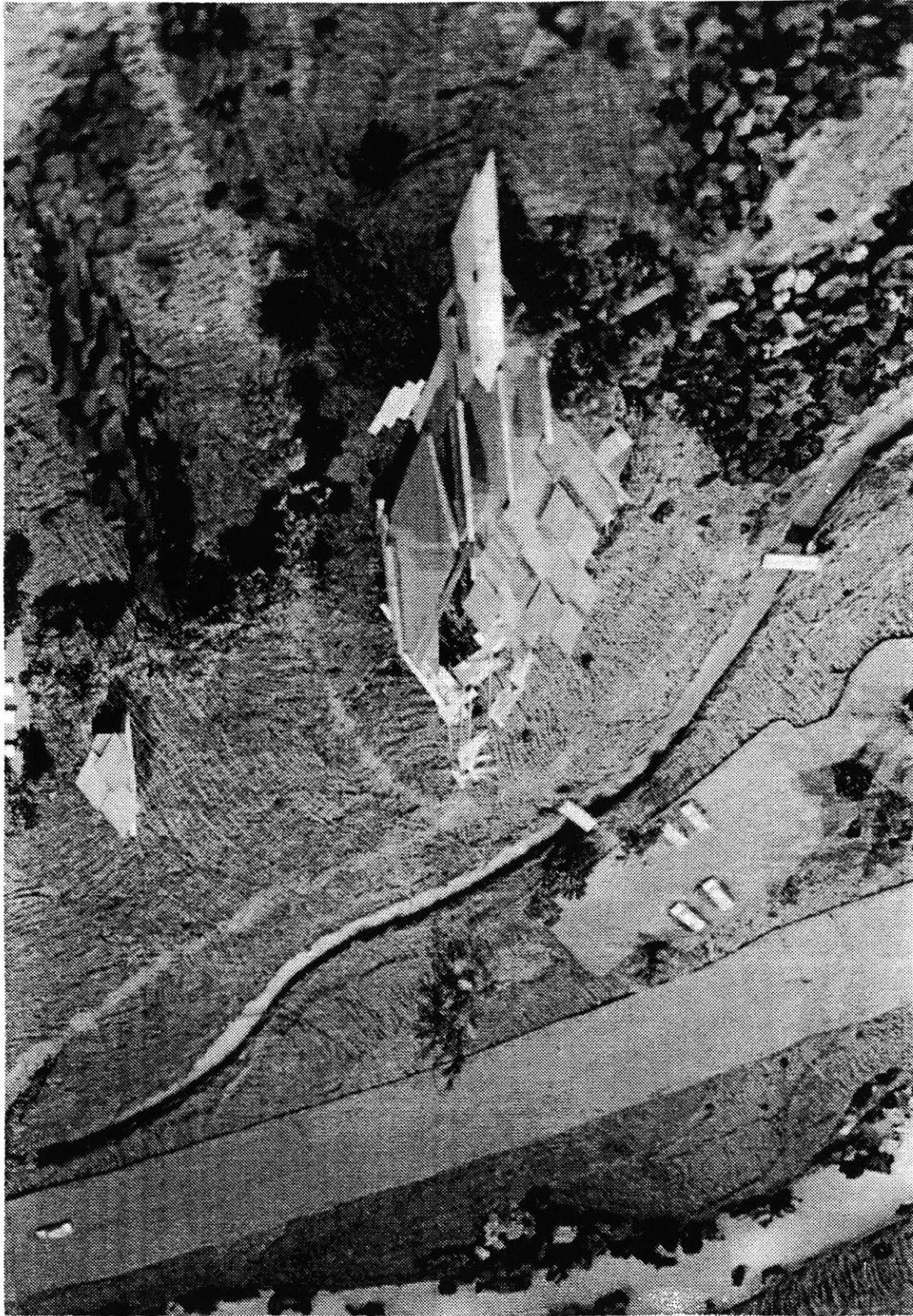


fig. 73.1 Site model with Museum and Settler's Park.



fig. 74.1 "Falling Leaves on Water", South Carolina, 1969.

This project has investigated the idea of harmonious design enabling an architectural presence to be appropriate in a natural setting. It has addressed the issue of responsible contribution to the environment. The setting has given its identity to the design values and its spirit to the architecture.

This thesis has articulated my thoughts and interests as an architect. Looking back on past projects, a conceptual relationship with the site has been intuitive but often unrecognized. The softening effects of weathering and the natural patina that comes with time have always appeared attractive. However, not until this thesis have they been incorporated as natural phenomena into the concept.

It is reassuring to acknowledge natural instincts on an intellectual level. To conceive architecture as a natural phenomenon is the most exciting realization of this thesis.

## Conclusion

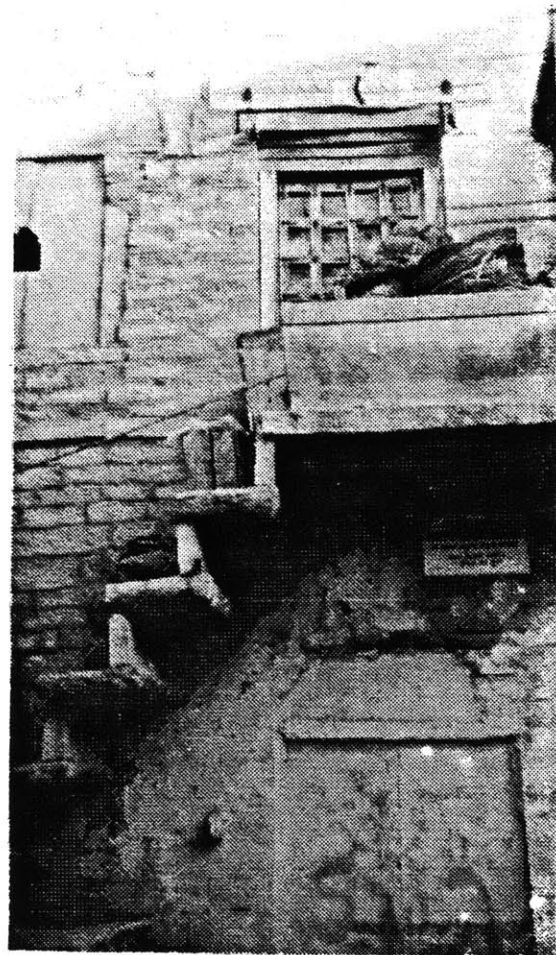


fig.75.1 Old stone stairs, Jaisalmer, India.

## Notes & Credits

All Illustrations and photographs are by the author unless otherwise note below:

fig. 8.1& 26.1

Partial photograph, "Aster and Fallen Branch".

Porter, Eliot. *Nature's Chaos*, p.10.

fig. 10.1,11.1,27.1,& 74.1

Partial photograph, "Fallen Leaves on Water".

Porter, Eliot. *Nature's Chaos*, p.38.

fig. 20.1

Photograph by Pedro E. Guerrero

Costantino, Maria. *Frank Lloyd Wright*, p.78.

fig. 20.2

Photograph by Henry Plummer

Plummer, Henry. *Poetics of Light*, p.189.

fig. 20.3

Photograph by Peter Cook

McCarter, Robert, *Fallingwater*, p.30.

fig. 21.1

Photograph

Zerbst, Rainer, *Antoni Gaudi*, p.121.

fig. 22.1& 22.2

Photograph

*Organic Architecture*, p.71.

fig. 23.1

Photograph

*Organic Architecture*, p.88.

fig, 23.2

Photograph

*Organic Architecture*, p.73.

fig. 38.1& 39.1

Photograph

"City of Boulder", *Chambers of Commerce*.

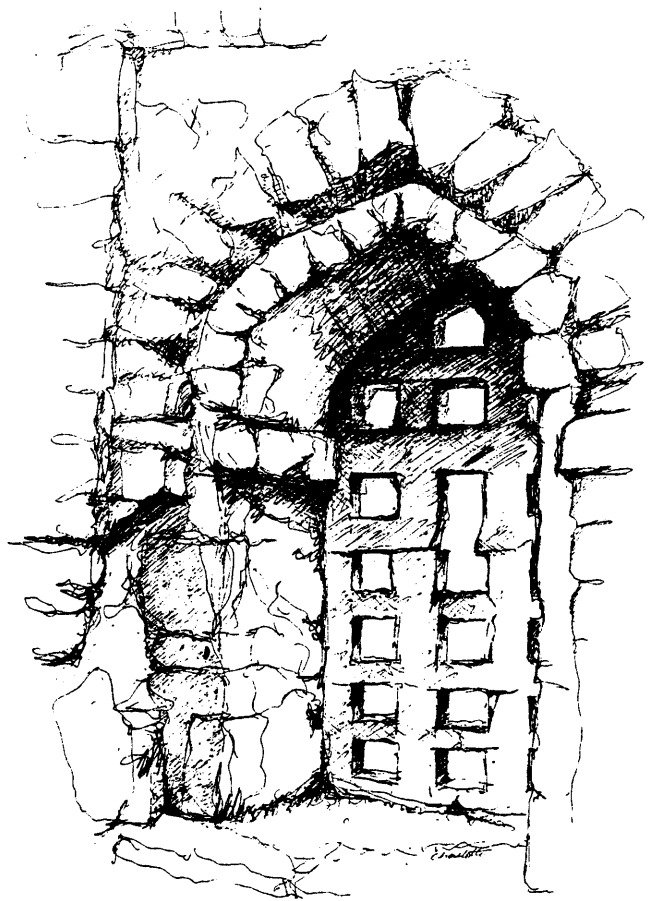


fig. 77.1 Old stone window, Delhi, India.

## Bibliography

Animal Architecture, New York, Museum of Finnish Architecture, (1995).

Architectural Design Profile No106, Organic Architecture, London, (1993).

Architecture and Body, Columbia Architecture Journal, New York, Rizzoli International Publications Inc., (1988).

Bourgeois, Jean-Louis, and Pelos, Carollee. Spectacular Vernacular, New York, Aperture Foundation, Inc., (1989).

Cache, Bernard. Earth Moves, the Furnishing of Territories, Cambridge, MIT Press, (1995).

Design with the Land, Landscape Architecture of Michael Van Valkenburgh, Princeton , Princeton Architecture Press, Inc., (1994)

Doczi, Gyorgy. The Power of Limits, Proportional Harmonies in Nature ,Art, and Architecture, Boston, Shambhala Publications, Inc., (1981).

Fitch, James M. American Building: 2. The Environmental Forces That Shape It, Houghton Mifflin Co., (1960).

Larkin, David and Pfeiffer, Bruce. Frank Lloyd Wright, The Masterworks, New York, Rizzoli International Publications, Inc., (1993).

Mark, Robert. Light, Wind , And Structure, Cambridge, MIT Press, (1994).

Metzger, Mary and Whittaker, Cinthya. This Planet Is Mine, Teaching Environmental Awareness and Appreciation to Children, New York, Simon and Schuster, (1991).

Mostafavi, Mohsen and Leatherbarrow, David. On Weathering, The Life of Buildings in Time, Cambridge, MIT Press, (1993).

Norberg-Schulz, Christian. Genius Loci: Towards a Phenomenology of Architecture, New York, Rizzoli International Publications, Inc., (1980).

Pearson, David. Earth To Spirit, In Search of Natural Architecture, London, Gaia Books Limited, (1994).



- Plummer, Henry. Poetics of Light, Tokyo, A+U Publications , Inc., (1987).
- Porter, Eliot and Gleick, James. Nature's Chaos, New York, Penguin Group, (1990).
- Rudofsky, Bernard. Architecture Without Architects. An Introduction to Non-pedigreed Architecture, New York, Doubleday and Co., Inc., (1964).
- Seamon, David. Dwelling, Seeing, Designing, Toward a Phenomenological Ecology, New York, State University of New York Press, (1993).
- Tanizaki, Jun'ichiro. In Praise of Shadows, New Haven, Leete's Island Books, Inc., (1977).
- Tuan, Yi-Fu. Space and Place, The Perspective of Experience, Minnesota, University of Minnesota Press, (1977).
- Wampler, Jan. All Their Own, People and the Places They Build, New York, Schenkman Publications Co., (1977).
- Wells, Malcolm. Gentle Architecture, New York, Mc Graw- Hill Books Co., (1982).
- Wedge, Stuart and Adams, Williams. Denatured Visions, Landscape and Culture In The Twentieth Century, New York, The Museum of Modern Art, (1994).
- Zerbst, Rainer. Antoni Gaudi, Tokyo, Rikuyo-sha Publishing Inc., (1985).

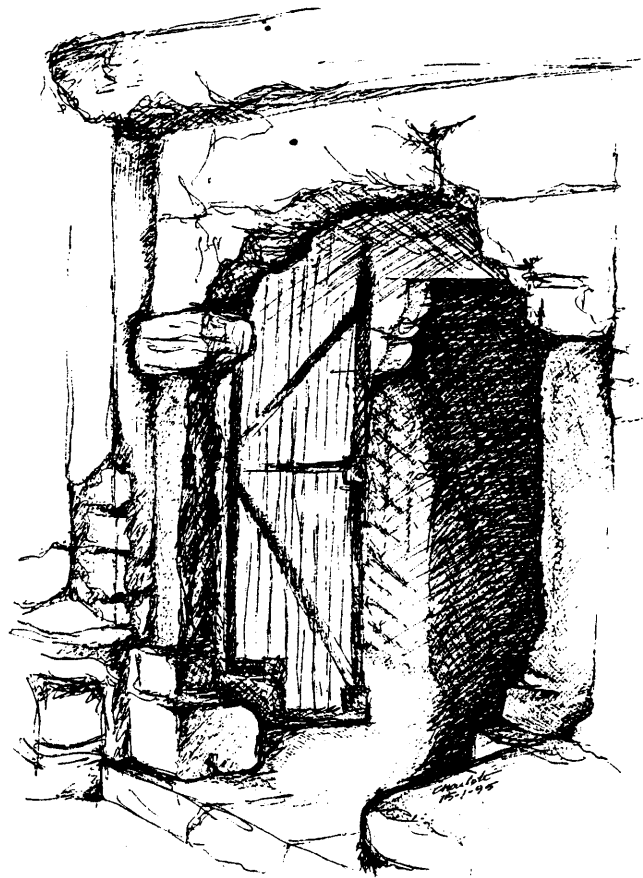


fig. 80.1 Old stone entrance, Delhi, India.

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**Here's to our future, how thrilling it is!**